

necessary to curtail lending to individual borrowers. This curtailment was due exclusively to prime and bank lending rates exceeding the legal limit the company could charge its customers, which are circumstances beyond the Company's control.

At December 31, 1981, the subsidiary's outstanding finance portfolio was \$1.5 million.

The outlook in 1982 for consumer aircraft loans is still clouded due to the various state statutory interest rate limits. Unless interest rates decline dramatically during the balance of 1982, we do not plan a meaningful resumption of direct consumer loans.

Prospects are somewhat brighter for qualified business or corporate aircraft loan applicants where state interest limits are at a higher level.

AVEMCO INSURANCE BROKERAGE, INC.

The purpose of this subsidiary is to serve the needs of clients, both within and outside of the aviation community, with insurance products not generally underwritten by the Company's primary subsidiary, AVEMCO Insurance Company. The brokerage division is a licensed property and casualty insurance brokerage firm offering all forms of insurance and surety such as, but not limited to, coverages on airline aircraft, helicopters, agricultural aircraft, corporate aircraft, and aircraft used for missionary work in foreign countries. In addition to aircraft insurance it does a substantial volume of business in automobile insurance, homeowners' insurance, general liability coverages, package policies on large office buildings and surety. These risks are placed with various insurers, both domestic and foreign, according to the class of business involved and the capabilities of the insurer employed. In this way the subsidiary matches the client with the best underwriter for the specific exposures to be accommodated.

AVEMCO SALES CORPORATION

Organized in 1977, AVEMCO Sales Corporation (ASC) is the product marketing subsidiary of the parent corporation. The primary goal of ASC is to make available to a broad spectrum of the aviation market, products which would economically improve pilot skills, reduce use of expensive fuel and effectively enhance flight safety. These worthwhile goals are being implemented through the sale and rental of a variety of instrument flight procedures and cockpit procedures training devices (simulators). The subsidiary has a formalized agreement to act as a national distributor for the

manufacturer, ATC™, a division of Electronic Associates, Inc.

Utilizing a portion of the millions of aircraft insurance direct mail pieces sent annually to pilots and aircraft owners and in media ads, ASC promotes the sales of these units. "Call free" inquiries are invited to all of AVEMCO's eight regional offices, and sales or rentals are consummated by telephone or through scheduled product demonstrations by our flying sales/underwriters.

The product line begins with a low-cost, sophisticated, tabletop IFR training device. We have sold over 600 of the ATC 510 and 610 units since the program started. The ATC 710 with enclosure is sold for use in flight schools to qualify pilots for part of their instrument training under FAA approval. The ATC 810 is a highly sophisticated instrument flight and cockpit procedures trainer simulating a cabin class, twin-engine aircraft. Demand for this training device comes from flight schools, colleges, corporate flight departments and even the airlines. ASC has sold a number of these units to those various markets. The commuter airlines, due to expected FAA training requirements, are now purchasing this unit for instrument currency and proficiency training.

ASC generated \$822,000 in sales of these various units in 1981 and anticipates increased sales in 1982 due to FAA's increased emphasis on improved pilot proficiency and increased operating costs of aircraft for training purposes.

LINDEN CORPORATION

The limited real estate activities in which the AVEMCO Group is engaged are carried out by Linden Corporation.

This subsidiary owns commercial and residential properties in Bristol, Virginia. The carrying value of these properties is approximately \$576,000.

A second trust real estate mortgage loan is held on the Linden Hill Hotel in Bethesda, Maryland. This note matures on September 16, 1982 in the amount of \$1,744,000.

Linden is operated as part of AVEMCO's overall investment program and as such has no employees fully dedicated to its operation.



William R. Le Strange
President, AVEMCO
Insurance Brokerage, Inc.



Robert A. Roe
President, AVEMCO
Sales Corporation
& Linden Corporation
Vice President - Marketing
AVEMCO Corporation

↓
356-1133

(703) 478-8606

Of Interest to Stockholders

Annual Stockholders' Meeting

The Annual Meeting of our stockholders will be held at the Holiday Inn, 8120 Wisconsin Avenue, Bethesda, Maryland on Friday, April 30, 1982 at 10:00 a.m.

Stock Transfer Agents and Registrars

National Savings and Trust Company
Washington, D.C.
The Chase Manhattan Bank, N.A.
New York, New York 10015

Certified Public Accountants

Peat, Marwick, Mitchell & Co.
1990 K Street, N.W.
Washington, D.C. 20006

Legal Counsel

Wald, Harkrader & Ross
1300 19th Street, N.W.
Washington, D.C. 20036

10-K Report

AVEMCO's Annual Report for 1981 (Form 10-K) as filed with the Securities and Exchange Commission will be available on or about March 31, 1982 without charge to stockholders. Write to Mrs. Clara D. Maher
Assistant Corporate Secretary
AVEMCO Corporation, Air Rights Building
Post Office Box 30007
Bethesda, Maryland 20814

Stock Listing

American Stock Exchange Symbol (AVE)

694-5200



AVEMCO Insurance Company (AIC) is the largest of the AVEMCO Group subsidiaries and serves as both a direct insurer of aviation and marine business and as a reinsurer of much of the insurance business produced by other subsidiaries of the AVEMCO Group.

Over the past 29 years, AIC has been committed to maintaining underwriting profitability, while providing its customers with quality insurance products and excellent customer service. While this business philosophy has served the company well, it also means that AIC must, when the market dictates, be willing to forego premium growth in order to maintain underwriting profitability.

Since early 1987, the aviation insurance marketplace, which is AIC's principal source of business, has experienced a downturn and severe price competition. Such downturns in the past have been cyclical.

AIC's continued adherence to its underwriting philosophy resulted in a decline in gross premiums written in 1989 to \$68,136,000 versus \$92,854,000 in 1988. As was the case last year, much of the decline in business

continues to be related to a decline in assumed aviation reinsurance business from an affiliate, Eastern Aviation & Marine Underwriters, Inc. (Eastern). Eastern's business is produced through independent agents and tends to be more sensitive to competition in the marketplace. AIC's direct new business production was also impacted during 1989, although the company's renewal business performed close to its historical norms in spite of competitive pressures.

AIC's Canadian aviation insurance business production for 1989 increased 20% to \$897,000 versus \$745,000 in 1988, in spite of similar price competition in the Canadian marketplace. This was the company's second full year of operations in Canada.

AIC's pleasure marine insurance business also showed growth. Pleasure marine gross written premiums for 1989 were \$1,883,000, a 61% increase from the prior year's premiums of \$1,168,000. The company began marketing marine insurance to watercraft owners in 1987 on a regional basis and by the end of 1989 was writing business in the 48 contiguous states. With that expansion of marine business nationwide, AIC purchased reinsurance to limit its exposure to catastrophic as well as certain other risks. The use of this reinsurance will reflect a lower level of net premium written as a percentage of gross premium written for 1990.



Ray C. Hall
President

The company's underwriting ratio is expected to exceed the results of the U.S. property and casualty industry by a fairly wide margin. AIC's underwriting loss and loss adjustment expense ratio in 1989 was 60.6% versus 1988's unusually low ratio of 47.8%. AIC's 1989 results are very close to its historical loss and loss adjustment expense ratio, which has averaged 60.5% over the preceding ten years. Incurred losses were about level with 1988's, even though the volume of newly established claims was down. An increase in weather related losses, including those caused by Hurricane Hugo, and the strengthening of reserves on a few large claims were the principal factors behind 1989's increase versus the previous year. The company's combined ratio, which includes losses, loss adjustment expenses and underwriting expenses, was 90.6% compared to 78.1% for 1988. This marks the fifteenth consecutive year AIC has achieved an underwriting ratio under 100%. A ten-year summary of AIC's statutory results is detailed on pages 12 and 13.

On November 8, 1988, California voters passed an initiative known as Proposition 103, which was subsequently upheld in large part by the California Supreme Court in a decision filed on May 4, 1989. The Proposition provides, among other things, that rates for most insurance policies issued or renewed after November 8, 1988, be rolled back to the levels of November 8, 1987, and then reduced an additional 20%.

Relief from the rollback can be obtained from the Commissioner if she finds the rollback is confiscatory (i.e. does not allow a fair and reasonable return). The Company applied for such relief prior to the June 3, 1989, deadline to do so. The Company's request for Insurance Department approval has been delayed and a "company specific" hearing (involving the Company's individual rates) set for some indefinite date. At this point, the Company is involved in a "generic" hearing (involving all California insurers writing business covered by the Proposition) and cannot predict when the numerous uncertainties created by Proposition 103 will be resolved.

As a result, net earnings prepared in accordance with generally accepted accounting principles (GAAP) for the year ended December 31, 1989, have been reduced by \$641,000, or \$.07 per share, reflecting the estimated potential impact on net earnings which might result from Proposition 103 rollbacks, should the Company's filings not be approved. In addition, other liabilities at December 31, 1989, have been increased by \$703,000 to reflect the reduction in net unearned premiums for California premium potentially subject to rollback

(Continued on page 14)

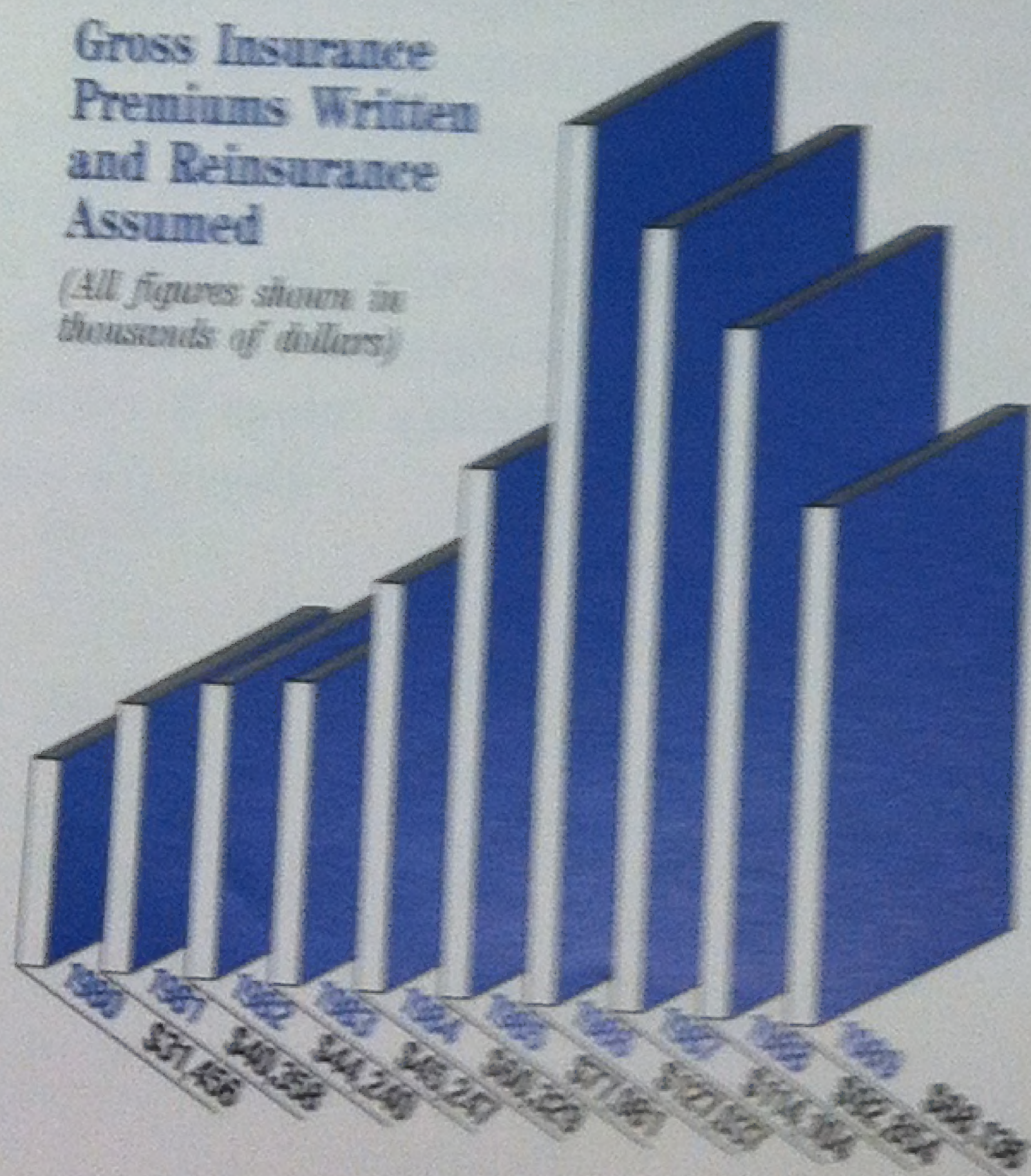
AMENCO Insurance Company and Subsidiaries
TEN-YEAR SUMMARY
(Statutory Basis)

	1989	1988	1987
<i>(All figures in thousands except ratios)</i>			
Direct premiums written	\$ 44,396	\$ 54,126	\$ 67,251
Reinsurance assumed	23,740	38,728	46,551
Gross premiums written	\$ 68,136	\$ 92,854	\$114,804
Net premiums written, after reinsurance	\$ 57,690	\$ 77,229	\$ 99,277
Net premiums earned	\$ 67,068	\$ 85,572	\$ 96,274
Losses and expenses incurred	57,926	64,286	74,645
Underwriting profit before tax	\$ 9,142	\$ 21,286	\$ 21,633
Loss ratio	60.6%	47.8%	52.5%
Expense ratio	30.0%	30.3%	25.8%
Underwriting ratio	90.6%	78.1%	78.3%
Underwriting profit	\$ 9,142	\$ 21,286	\$ 21,633
Investment income before taxes	9,468	8,056	7,410
Realized investment gains (losses)	1,921	202	1,480
Earnings before taxes	20,531	29,544	30,523
Income taxes	4,656	8,004	10,067
Net earnings	\$ 15,875	\$ 21,540	\$ 20,456
Investments	\$128,792	\$137,732	\$120,505
Total assets	\$142,898	\$153,997	\$146,704
Unearned premiums	\$ 23,965	\$ 33,344	\$ 41,686
Unpaid losses and loss adjustment expenses	\$ 39,485	\$ 38,296	\$ 41,620
Policyholders' surplus	\$ 77,153	\$ 78,433	\$ 57,619
Ratio of net premiums written to policyholders' surplus	.75/1	1.0/1	1.6/1

1986
\$ 68,849
58,188
\$127,037
\$ 98,247
\$ 76,921
71,156
\$ 5,765
60.5%
25.0%
85.5%
\$ 5,765
5,611
1,523
12,899
3,746
\$ 9,153
\$100,546
\$127,436
\$ 44,686
\$ 35,153
\$ 41,421
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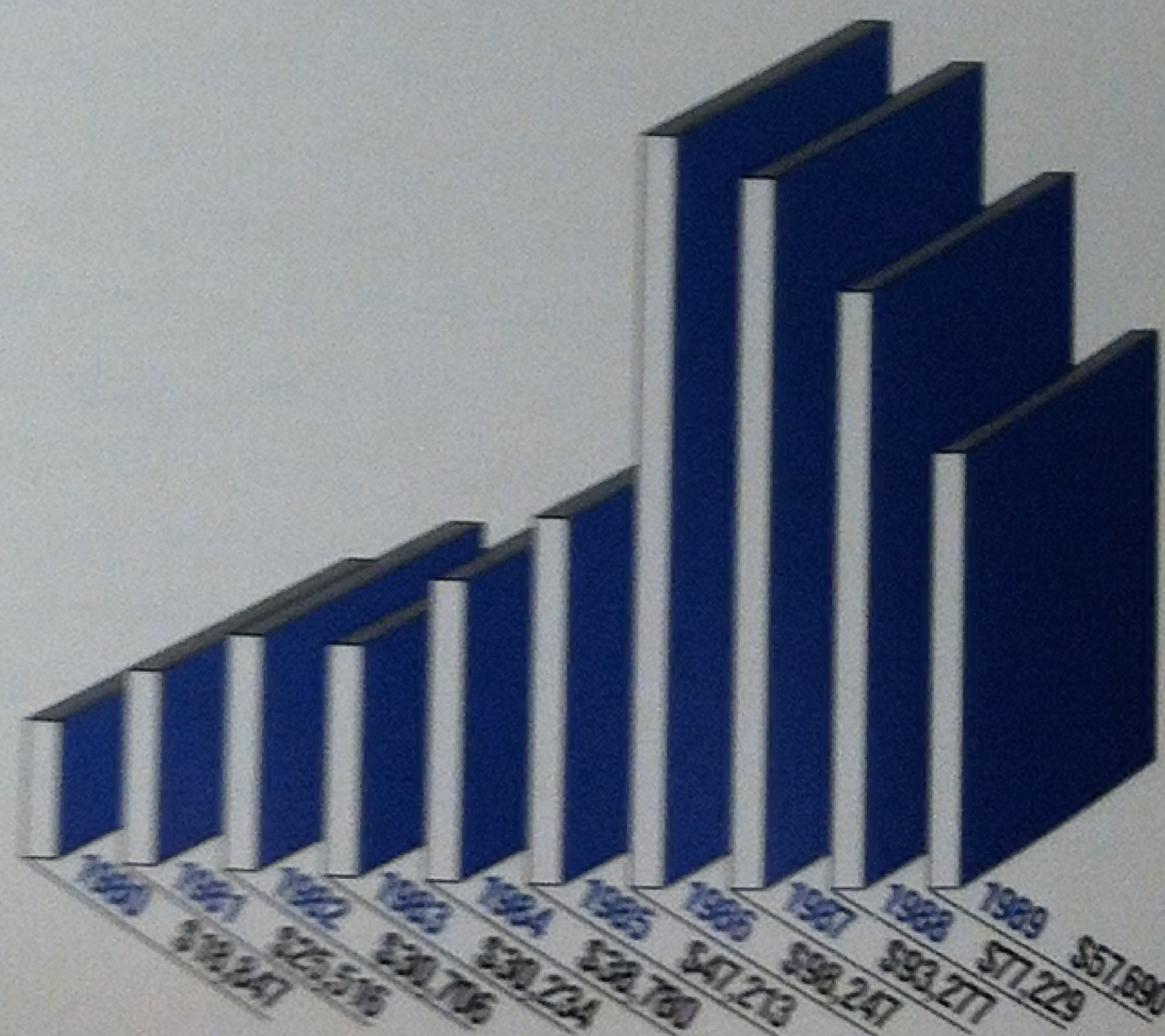
Gross Insurance
Premiums Written
and Reinsurance
Assumed

*(All figures shown in
thousands of dollars)*



Net Premiums Written After Reinsurance

*(All figures shown in
thousands of dollars)*



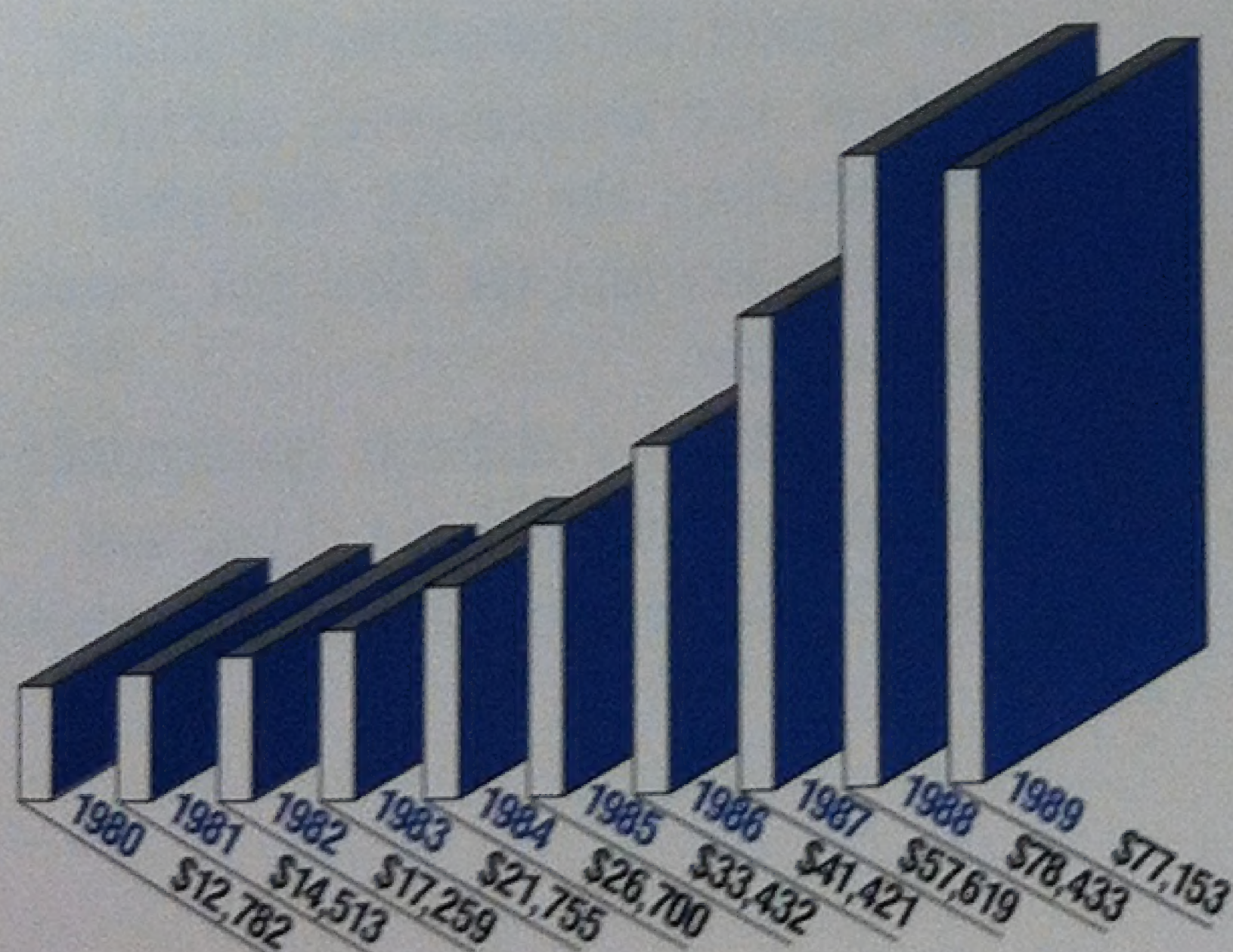
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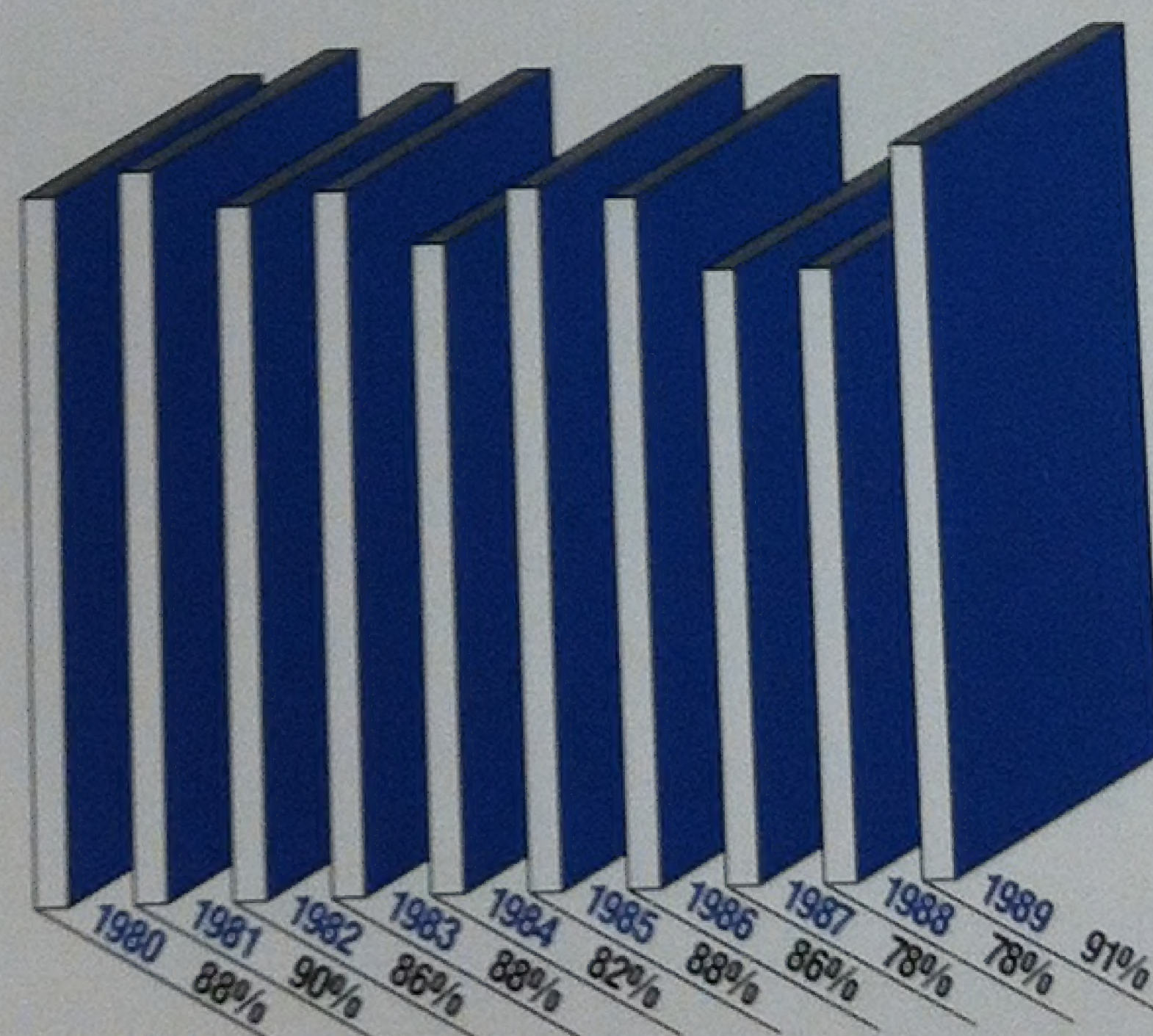
1986	1985	1984	1983	1982	1981	1980
\$ 68,849	\$ 57,222	\$ 46,769	\$ 42,210	\$ 42,653	\$ 38,260	\$ 29,501
58,188	20,759	13,560	3,037	1,587	2,098	1,955
\$127,037	\$ 77,981	\$ 60,329	\$ 45,247	\$ 44,240	\$ 40,358	\$ 31,456
\$ 98,247	\$ 47,213	\$ 38,780	\$ 30,234	\$ 30,706	\$ 25,516	\$ 18,847
\$ 76,921	\$ 42,622	\$ 35,738	\$ 29,411	\$ 28,366	\$ 22,407	\$ 16,499
71,156	38,383	30,111	25,964	24,986	20,768	14,997
\$ 5,765	\$ 4,239	\$ 5,627	\$ 3,447	\$ 3,380	\$ 1,639	\$ 1,502
60.5%	65.1%	60.7%	62.2%	63.3%	68.8%	69.7%
25.0%	22.5%	21.7%	25.3%	22.9%	21.0%	18.6%
85.5%	87.6%	82.4%	87.5%	86.2%	89.8%	88.3%
\$ 5,765	\$ 4,239	\$ 5,627	\$ 3,447	\$ 3,380	\$ 1,639	\$ 1,502
5,611	4,332	3,700	3,238	3,095	2,956	2,273
1,523	395	(246)	(350)	71	215	(17)
12,899	8,966	9,081	6,335	6,546	4,810	3,758
3,746	2,630	2,980	1,902	2,216	1,418	1,120
\$ 9,153	\$ 6,336	\$ 6,101	\$ 4,433	\$ 4,330	\$ 3,392	\$ 2,638
\$100,546	\$ 66,354	\$ 48,569	\$ 41,902	\$ 36,773	\$ 32,582	\$ 26,290
\$127,436	\$ 81,692	\$ 64,673	\$ 58,294	\$ 53,148	\$ 46,462	\$ 36,270
\$ 44,686	\$ 23,361	\$ 18,769	\$ 15,727	\$ 14,904	\$ 12,564	\$ 9,455
\$ 35,153	\$ 20,336	\$ 15,430	\$ 13,305	\$ 12,897	\$ 10,266	\$ 8,134
\$ 41,421	\$ 33,432	\$ 26,700	\$ 21,755	\$ 17,259	\$ 14,513	\$ 12,782
2.4/1	1.4/1	1.5/1	1.4/1	1.8/1	1.8/1	1.5/1

Statutory Policyholders' Surplus

(All figures shown in thousands of dollars)



Underwriting Ratio



but not yet earned as of December 31, 1989. The Company plans to continue reflecting the estimated potential impact against its GAAP net earnings which might result from Proposition 103 until developments warrant otherwise.

For Statutory Accounting purposes, the California Insurance Department indicated that if an insurer has filed for an exemption from the rate rollback, appropriate disclosure is to be made in the form of a note to the statutory financial statements, since the ultimate outcome of the request for exemption cannot be presently determined. Accordingly, the Company has made the appropriate footnote disclosure in its statutory filings with state insurance departments, and has not adjusted its statutory financial statements.

In response to ongoing market conditions, the company has continued to focus on expense reductions. During 1989, AIC implemented a computer based quotation and prospecting system in all ten of its sales offices in the United States and Canada. In addition to automating certain underwriting and

administrative functions, the company hopes to reduce its long-term cost of advertising by internally building detailed prospect lists for sales solicitation. Through increased automation, AIC should be able to operate more efficiently and with fewer employees than in the past. At the end of 1989, AIC employed 124 people, compared with 166 at the end of 1988. For 1990 the company plans to keep a higher net retention of its aviation business and cede less to its reinsurers.

The two wholly owned capital stock insurance subsidiaries of AIC, Eastern Aviation & Marine Insurance Company (EAMIC) and National Assurance Underwriters, Inc. (NAUI), increased their number of state insurance licenses in 1989 (EAMIC to 44 and NAUI to 37) and are now operational in a majority of states in which they are licensed. In addition to the aviation and marine lines, EAMIC is also being licensed so that it will have the capability to write the vendor's single interest business of AIC's affiliate, Matterhorn Bank Programs, Inc.

AIC's commitment to general aviation remains strong. The company continues to support the activities of, among others, the Experimental Aircraft Association, the AOPA Air Safety Foundation and the National Aeronautic Association.

In spite of a difficult marketplace in 1989, AIC enjoyed the third most profitable year in its company history.



ational Aviation Underwriters, Inc. (National) is the managing general agent for National Assurance Underwriters, Inc. (NAUI), a capital stock insurance company which is a member of the AVEMCO Group. National also acts as the attorney-in-fact for National Insurance Underwriters (NIU), a reciprocal insurance exchange which was organized in 1945. National, a member of the AVEMCO Group since 1985, markets aviation and pleasure marine insurance through a network of exclusive agents strategically located throughout the United States.



Ronald H. Wilson
President

National experienced a decline in overall premium volume in 1989, although pleasure marine premiums increased over those produced in 1988. Ongoing price competition in the aviation insurance business continued to impact premium production. The company's commitment throughout the year to underwriting profitability remained intact and National delivered to the Group's insurers an underwriting profit for 1989.

National implemented a computer

assisted quotation and prospecting system in several of its regional sales offices in 1989. The company plans to have systems installed in all ten of its sales offices by the end of the first quarter of 1990. These systems will automate many underwriting and administrative functions and should reduce certain expenses over the long term.

Expense control was paramount in 1989 and further savings are targeted for 1990.



Eastern Aviation & Marine Underwriters, Inc. (Eastern) is a managing general agency which markets and underwrites aviation and marine insurance through independent agents in all 48 contiguous states. Its activities complement the activities of AVEMCO Insurance Company, which writes the same lines of business on a direct basis. Eastern's primary objective is to achieve an underwriting profit for the AVEMCO Group on the business it produces. Eastern is currently managing the insurance operations of Eastern Aviation & Marine Insurance Company (EAMIC), a wholly owned subsidiary of the AVEMCO Insurance Company. Eastern also continues to represent several non-affiliated insurance companies as a managing general agency for aviation business.

Over the past five years, the company had written marine insurance as a retail agent for non-affiliated insurers and had gained first-hand experience in this line of business.



Harry C. Walker
President

In April of 1989, Eastern transferred this book of retail marine business to its affiliate, Brooks-Shettle Company, and commenced writing marine insurance through EAMIC, utilizing the independent agency system in the same manner it currently conducts its aviation business. While Eastern produced only \$127,000 in marine premium through independent agents during 1989, most of the business was written in the latter part of the year, and the prospects are encouraging. The company has been successful in recruiting a number of new agents to write marine business, and it anticipates growth in this line during 1990.

The ongoing price competition in the aviation insurance marketplace continued to impact Eastern's aviation business during 1989. Rate levels remained depressed, and Eastern saw its premium writings decrease. The company nevertheless continued to produce an underwriting profit for the Group.

In spite of the downturn in aviation premium production, Eastern remains optimistic for the future. During the coming year, Eastern plans to stick with its basic business strategies. The company plans to write business with the intent of producing an underwriting profit and will maintain its commitment of excellent service and value to the independent agent.



Harry C. Walker
President



Matterhorn Bank Programs is a managing general agency serving the nation's financial institutions with a variety of specialized insurance programs. These programs are designed to address both the business risk and the administrative costs associated with the installment lending business and to help stabilize and improve the lender's profit margins.

Matterhorn, through its network of over 150 independent agents, provides insurance for more than 700 banks and other financial institutions in 46 states and the District of Columbia.

Matterhorn's primary product, blanket vendor's single interest, is dependent on automobile sales, and as car sales faltered during 1989, the company experienced an 8.8% decline in premium production. AVEMCO Insurance Company is the principal reinsurer of this business. Total written premiums for the year were \$9,558,000 versus \$10,486,000 in 1988.

A number of emerging trends in the automobile lending business may have an impact on this business. First, Matterhorn's traditional customer, the community bank, faces increased competition, especially from the captive finance subsidiaries of the major automobile manufacturers. These captives now frequently offer heavily discounted finance rates to spur sales of new cars, leaving the community bank at a competitive disadvantage. Second, the growth in "home equity" loans has created a new source of funds for purchasing automobiles in which the interest remains fully tax deductible for

individuals compared to the limited interest deductibility of a conventional automobile loan.

Matterhorn is addressing these trends with several new products and strategies. During 1989, Matterhorn began to aggressively market a new mortgage impairment product. This policy is a single interest form to cover the physical damage to mortgaged real property. During the last six months of the year, the company wrote 21 mortgage impairment policies and anticipates writing substantially more of this business in the coming year. If the current popularity of "home equity" borrowing continues, over time, a higher proportion of Matterhorn's business will likely be derived from this product.

During the first half of 1990, Matterhorn plans to introduce a new marine lenders broad form policy. This policy has been designed to cover the special lending exposures of the marine finance industry. It is similar to the successful aviation lenders broad form policy currently offered by both Matterhorn and AVEMCO Insurance Company.

The past decade has brought many changes to the installment lending industry and the coming decade will likely bring more. Traditional insurance programs will need to keep pace with the change. Matterhorn starts the new decade committed to meeting the current and future needs of its clients.



Harry C. Walker
President

Nothing
③

Loss Management Services, Inc., (LMS) handled numerous challenges in 1989 while also laying the groundwork for a number of new initiatives for 1990 and beyond.

The primary objective of LMS is to provide comprehensive claims and risk analysis services to AVEMCO Group companies which are principally engaged in the aviation and pleasure marine insurance businesses. LMS also provides more limited claims support services to Matterhorn Bank Programs, Inc. and MEDEX Assistance Corporation.

During 1989, LMS handled more than 3,300 claims and provided AVEMCO Group policyholders with prompt, responsive claim handling service while providing a stable and cost effective loss adjustment expense for the Group's insurers. LMS also recovered significant amounts through its subrogation and salvage efforts for AVEMCO Group companies during the year, using its own dedicated legal resources and computerized salvage bidding programs.

Two catastrophic weather related losses during 1989 demonstrated the capabilities of LMS to provide responsive policyholder claim service.

□ In Nevada, a large thundercell left much of the McCarran International Airport and nearby Sky Harbor Airport ramp areas in shambles. Near 100 mph wind gusts damaged more than 100

aircraft, including 30 that were insured by the AVEMCO Group companies. LMS personnel arrived less than 12 hours after the storm subsided, and began to settle total loss claims while arranging to have other insured aircraft moved to repair shops before some other insurers were even on the field.

□ Hurricane Hugo provided an even greater challenge for the claims professionals of LMS. In excess of 60 aircraft and boats insured with the AVEMCO Group were damaged as a result of Hugo. The LMS claim team again moved onto the scene within hours after the storm subsided, handling total losses and authorizing repairs within days after arrival. This prompt action assisted the Group's policyholders in obtaining priority service on necessary repairs.

In addition to the services provided to AVEMCO Group companies, LMS also commenced marketing its claims handling and risk analysis services to companies outside the Group. One such arrangement called for LMS to provide risk analysis services to a major mining and exploration company. LMS plans to expand its business from sources other than the AVEMCO Group over the next several years.

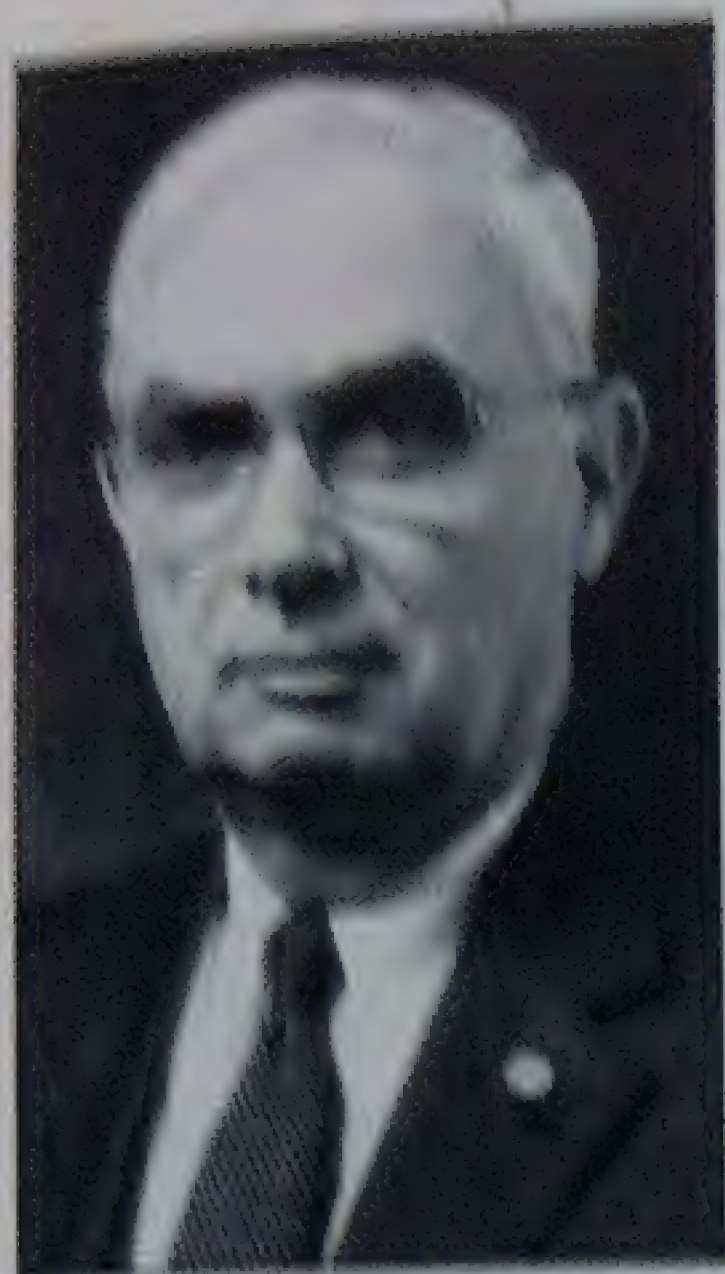
Plans are also being studied for the construction of an LMS salvage storage facility in the St. Louis, Missouri, area. It will combine secure salvage storage, wreckage layout and salvage sales operations, all in the same compound. The facility may be operational as early as the first quarter of 1991.



John H. Ballard
President



John F. S.
Pre



John F. Shettle, Sr.
President

Brooks-Shettle Company is a multi-line insurance agency which sells personal and commercial insurance coverages, including marine insurance, in the Mid-Atlantic region. The company also provides insurance and risk management services for the AVEMCO Group.

In addition to these activities, Brooks-Shettle acts as the managing general agent for a travel insurance product it developed called TravMed®. A typical TravMed® policy combines major medical insurance coverage with medical evacuation and 24-hour multi-lingual emergency assistance services for U.S. citizens when traveling abroad. The medical insurance component of the product is underwritten by a U.S. life and health insurance company and is reinsured by AVEMCO Insurance Company. Another AVEMCO Group company, MEDEX Assistance Corporation, provides the evacuation and multi-lingual emergency assistance services for the TravMed® program.

During the second quarter of 1989, Brooks-Shettle introduced a TravMed® product designed to meet the needs of U.S. students while studying abroad. This product is currently being marketed through American colleges and universities which sponsor student abroad programs. Initial response to this product has been encouraging. Although the overall TravMed® program is still modest in size, premiums increased in 1989 over the prior year and the

business continues to represent a growth opportunity for Brooks-Shettle.

In April of 1989, Brooks-Shettle assumed the retail marine agency operations of Eastern Aviation & Marine Underwriters, Inc. (Eastern), as had been previously planned. In early January 1990, Brooks-Shettle acquired the business of Brouwer Marine Insurance Consultants, Inc., a marine insurance agency located in Toms River, New Jersey. The assumption of Eastern's retail marine agency business and the acquisition of the Brouwer agency's business is intended to combine the AVEMCO Group's retail agency operations within the Brooks-Shettle organization and also to establish Brooks-Shettle as a significant competitor for marine business in the Mid-Atlantic Coast region. The combined book of retail agency marine business now exceeds two million dollars.

During 1990, Brooks-Shettle plans to continue to focus its efforts on building both its retail marine and travel-related insurance businesses.



MEDEX Assistance Corporation provides world-wide multi-

lingual emergency assistance services on a 24-hour basis for individuals who become sick or injured while traveling outside their home country. Emergency assistance services include locating the nearest medical care facility for the sick or injured person and then contacting and maintaining contact with that person's family, personal physician and employer. MEDEX also verifies the existence of insurance coverage, can arrange for emergency evacuation and can assist in the transfer of funds for payment of required medical services. MEDEX maintains assistance centers in



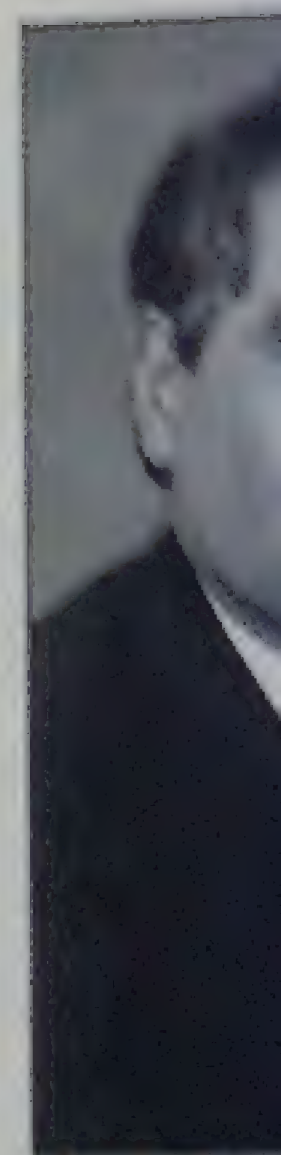
John F. Shettle, Sr.
President

Lutherville, Maryland, and in Brighton, England. Each assistance center is staffed by multi-lingual assistance coordinators, who are trained to respond to emergency medical assistance needs anywhere in the world.

MEDEX's clients include major health insurers and businesses in North America and abroad, as well as health maintenance organizations and credit card issuers in the United States. These organizations recognize the benefit of MEDEX as a tool to enhance the retention of their own business. Organizations in the health insurance or health maintenance business also appreciate MEDEX's ability to control costs and help guard against unreasonable claims.

During the second quarter of 1989, MEDEX announced its decision to undertake international health claims adjudication business as an additional service for its clients. This decision allows MEDEX to address more of the needs of its existing clients and enables the company to more fully utilize the specialized skills of its staff.

An ever increasing number of people are becoming aware of the value and availability of the kind of assistance services that MEDEX provides. The company believes its prospects for continued growth are most encouraging.



Daniel F. Shettle, Jr.
Vice President

THE WHEATLEY GROUP, LTD.



he Wheatley Group, Ltd.

(Wheatley) develops, markets and sells computer software systems for the property and casualty insurance industry. Wheatley's primary software product is an integrated processing system called WINS®. Applications include the various policy administration, claims management, and financial and statistical reporting functions necessary for insurance company operations. WINS® is specifically written for use on IBM's System/38 and the recently introduced AS/400 mid-range computers.

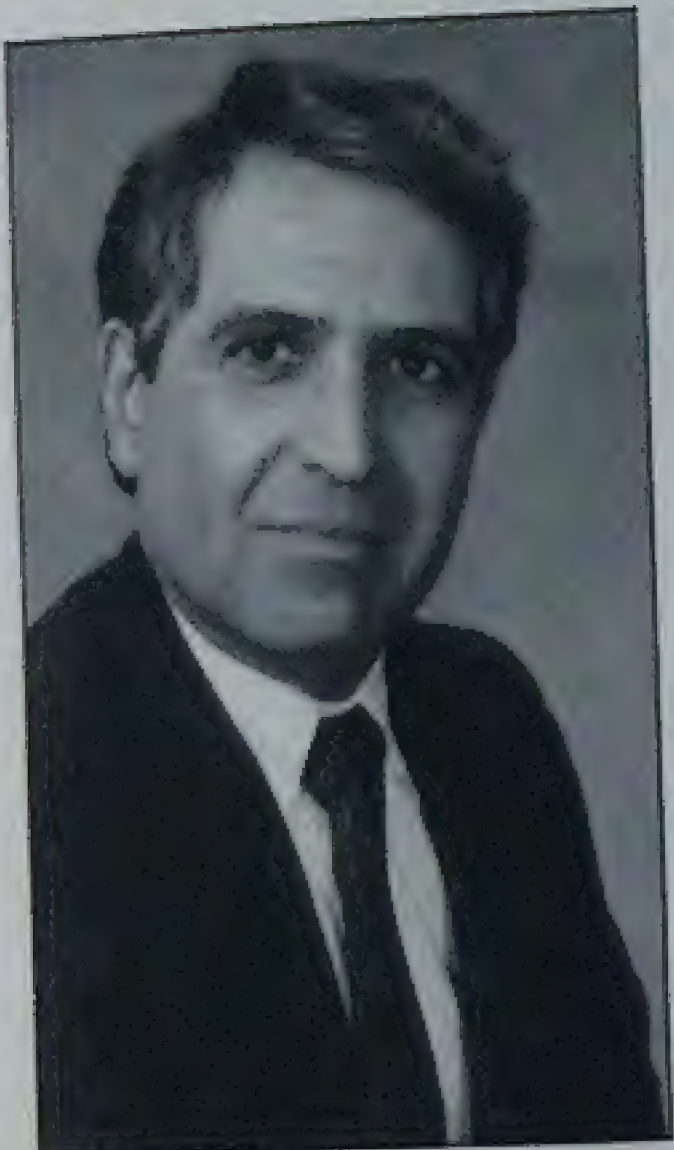
Wheatley's basic business objective is to develop and provide standardized software products which can be implemented rapidly and cost effectively.

Currently in its fourth generation, WINS® has evolved into a modular design which can normally be installed with a minimum need for system customization. A Wheatley client can select from a combination of standard products which correspond to the insurance lines it writes. Later, other software modules can be added to the system as the client's business expands or changes.

Wheatley's research, development and

product enhancement efforts continued during 1989. In 1990, Wheatley plans to introduce its WINS® RE reinsurance administration system. Wheatley also intends to bolster its sales staff in order to increase new business sales.

Wheatley's relationship as an IBM "Business Partner" along with a joint advertising campaign are also expected to generate a number of new sales leads for the company.



Daniel J. Dolcetti
President



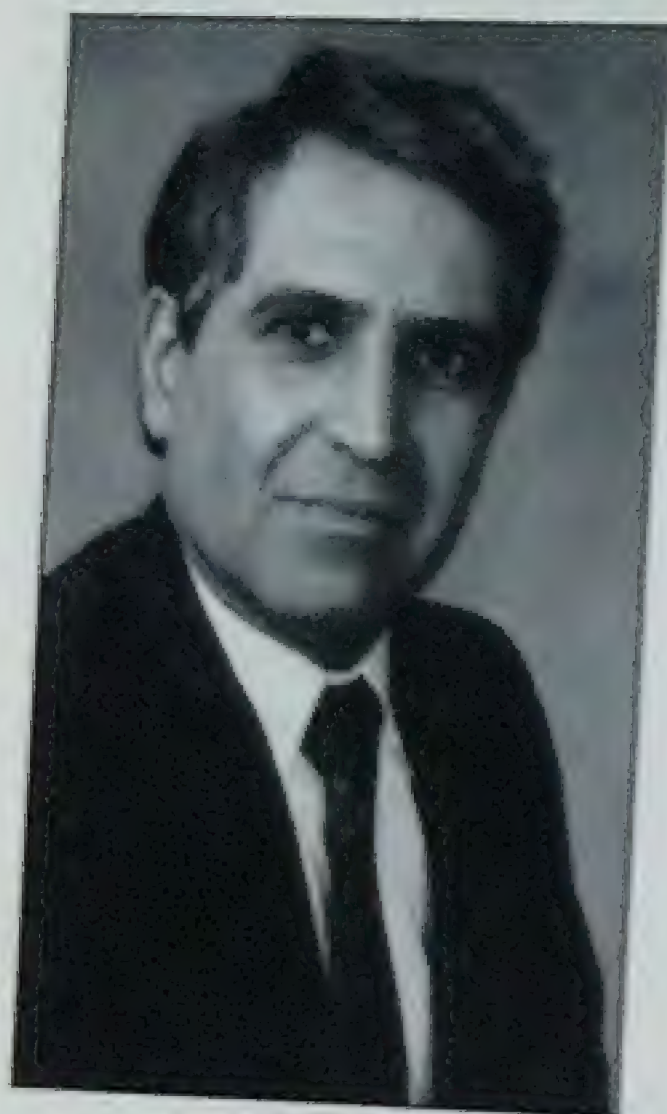
Edward H. Utley

Board and Management Developments

Edward H. Utley was elected to the AVEMCO Board of Directors in 1989 for a three-year term. Mr. Utley is presently President of GEICO Corporation and GEICO Indemnity Company. He joined GEICO in 1973 as an assistant vice president for data processing. Prior to that he served for 20 years in the United States Marine Corps as a data processing officer.

Early in 1990 the board of directors of The Wheatley Group, Ltd. elected Daniel J. Dolcetti as president of that subsidiary. Mr. Dolcetti joined Wheatley in January 1988 as senior vice president and chief operating officer.

Loss Management Services, Inc. promoted two of its employees to the office of vice president in April 1989—Richard Boeschen and Duane R. Dyckman, both of whom have been involved in claims activities for many years.



Daniel J. Dolcetti



Richard Boeschen



Duane R. Dyckman

Community Awareness

During 1989 AVEMCO employees continued their commitment to doing volunteer work for many community organizations throughout the country. A total of 800 hours of volunteer work was reported by employees who prepared and served meals at soup kitchens, assisted in fund raising efforts for Hospice and other organizations, visited nursing homes, and participated in programs run by Special Olympics. AVEMCO is grateful to its employees for giving their time, talents and devotion to those in need.

Participation in Aviation Awareness and Safety

AVEMCO received an AOPA Air Safety Foundation Presidential Citation in recognition of its dedication and support of general aviation safety. Specifically, AVEMCO Insurance Company (AIC) sponsored twenty aviation safety seminars throughout the nation in 1989 and made grants to the Air Safety Foundation to produce safety films on "Midair Collision Avoidance" and "Aircraft Icing."

AVEMCO Insurance Company again was proud to be the primary sponsor in 1989 of the EAA Aviation Foundation's Air Academy, an intense aviation learning experience for youth 15-17 years old. AIC also provided some individual academy scholarships for youngsters who might not otherwise have had the funds to attend.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Liquidity and Capital Resources

LIQUIDITY—(The Company's Consolidated Statements of Cash Flows on page 37 detail the net cash provided and used by operating, investment and financing activities.) Cash flows from operating activities have declined during the last three years because of the continued reduction in premium production. Gross premiums written have declined from \$114,104,000 in 1987 to \$68,136,000 for 1989, principally due to the continued severe rate cutting in the aviation insurance industry. The Company's basic philosophy is to charge a premium commensurate with the risk insured and sufficient to generate an underwriting profit. As such, the Company has been unwilling to write business at what it

considers inadequate rates. This disciplined approach to underwriting has allowed the Company to generate a profit in a difficult competitive environment.

In addition to the cash flow from operations in 1989, \$16,415,000 in funds were provided from investment activities, including \$2,825,000 from the sale of an aircraft, a real estate holding, and other used equipment. Sale of those assets will not have a material impact on future results of operations and liquidity. Funds provided from other investment activities were predominantly used to repay bank debt as more fully discussed below.

The Company follows investment guidelines which, in addition to providing for an acceptable after-tax return on its investments, are structured to preserve capital, maintain sufficient liquidity to meet obligations, and retain an ample margin of capital and surplus to assure unimpaired ability to write insurance. Due to the Company's current tax position, the largest single portion of its portfolio is invested in tax-advantaged securities. The Company has not been impacted by the alternative minimum tax provision included in the Tax Reform Act of 1986, but may become so in the future. In that event, the Company will consider shifting its investment portfolio mix to meet its after-tax return objectives.

The Company does not, as a matter of policy, invest in what are commonly referred to as junk bonds. Nor does it have any direct investments in real estate mortgages. Further, the Company limits its investment in defined common stocks to 36 percent

of the previous quarter's consolidated net worth. Net unrealized appreciation on equity securities, after deferred taxes, was \$6,705,000 compared to \$3,208,000 in 1988. At the end of 1989, the market value of fixed maturity investments was \$106,228,000 which was \$2,870,000 above their financial statement carrying value. At December 31, 1989, the Company had \$11,767,000 in cash and short-term investments. Additionally, approximately \$2,239,000 of its fixed income portfolio will mature in 1990. (Additional information with respect to the Company's investment portfolio is detailed on page 24 of this annual report.) An additional source of short-term liquidity includes a credit facility with a bank. \$9,698,000 remains unused under this commitment and would be available to address short-term cash needs. The Company does not anticipate cash flow from operations to improve until its premium production increases. Short-term liquidity is considered adequate.

CAPITAL RESOURCES—The Company has repurchased its common shares through open market and private transactions during the last three years. The Company acquired 605,300 shares in the 1987 fourth quarter for \$10,695,000; 63,400 shares in 1988 for \$1,520,000; and 925,107 shares in 1989 for \$22,153,000, including 427,807 shares purchased from GEICO Corporation, a significant shareholder, in a single transaction for \$9,999,989. At December 31, 1989, 406,193 shares remained authorized for repurchase out of the two million shares authorized for repurchase by the Board of Directors.

The Company borrowed \$34,368,000

during the last three years to repurchase its common stock. \$20,312,000 of those borrowings were repaid during 1989. Funds to repay the debt were provided by the Company's principal subsidiary, AVEMCO Insurance Company, through dividends. Regulatory restrictions on dividends are detailed in Note 11 to the Consolidated Financial Statements. The repurchase program reflects continued efforts to effectively manage capital and enhance stockholder value and will not inhibit growth since the Company is adequately capitalized to support planned future activities.

Results of Operations **1989 Compared to 1988**

Severe competitive rate pressures, greater than normal weather-related losses, and the developing uncertainties of California Proposition 103 regarding insurance regulatory changes all came to bear on 1989 results of operations.

Competitive rate pressures continued in the aviation insurance industry during 1989, and were reflected in premium production. As a result, gross premiums written of \$68,136,000 declined by 27% from 1988's \$92,854,000. Net premiums written, a more

(Continued)

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

(Continued)

Results of Operations 1987 Compared to 1986

The Company's underwriting philosophy was put to the test in 1987 as price competition and the reunderwriting of the aviation business managed by National Aviation Underwriters, Inc. (National), and reinsured by AVEMCO Insurance Company caused gross premiums written to decline by 10% from 1986. Net premiums written after reinsurance, a more accurate measure of potential future revenues, decreased only 5% from \$98,247,000 in 1986 to \$93,277,000 in 1987. The reunderwriting of the National book of business was performed to improve underwriting results and has now been completed.

Net investment income rose 24% as operations continue to contribute significant funds to the investment portfolio. Commission revenues decreased over 1986 and is

consistent with the premium decline. Other revenues increased by \$2,361,000, mainly as a result of the Company's 1987 purchase of The Wheatley Group, Ltd., which develops, markets, and installs data-based software systems for the property-casualty insurance industry.

The loss ratio improved considerably to 52% in 1987 as compared to 61% in 1986. A drop in claims frequency and severity on certain classes of business favorably impacted this downward trend. Commission expense remained flat as a result of the production trend coupled with the amortization of previously deferred policy acquisition costs. Other expenses increased over 1986 due primarily to operating costs associated with the recently acquired Wheatley Group, Ltd., costs associated with the start-up, development and implementation of some new programs, such as AVEMCO Insurance Company's pleasure marine program, and costs associated with a larger employee base.

The effective tax rate dropped from 30.1% in 1986 to 28.1% in 1987, principally the result of changes imposed by the Tax Reform Act of 1986.

Strong underwriting results coupled with significant investment income growth were the factors that strongly increased 1987 net earnings by 62% over 1986.

Revenues:

Premiums earned (note 7)
Commissions
Net investment income
Realized gain (loss) on
Other revenues

Total revenues

Expenses:

Losses and loss adjustments
Commissions (note 12)
Interest (note 8)
Selling, general and administrative

Total expenses

Earnings before income taxes

Income taxes (note 7):

Current provision
Deferred benefit

Total income taxes

Net earnings

Net earnings per common share

Weighted average number of shares outstanding

See accompanying notes to financial statements



Northrop Corporation

1988

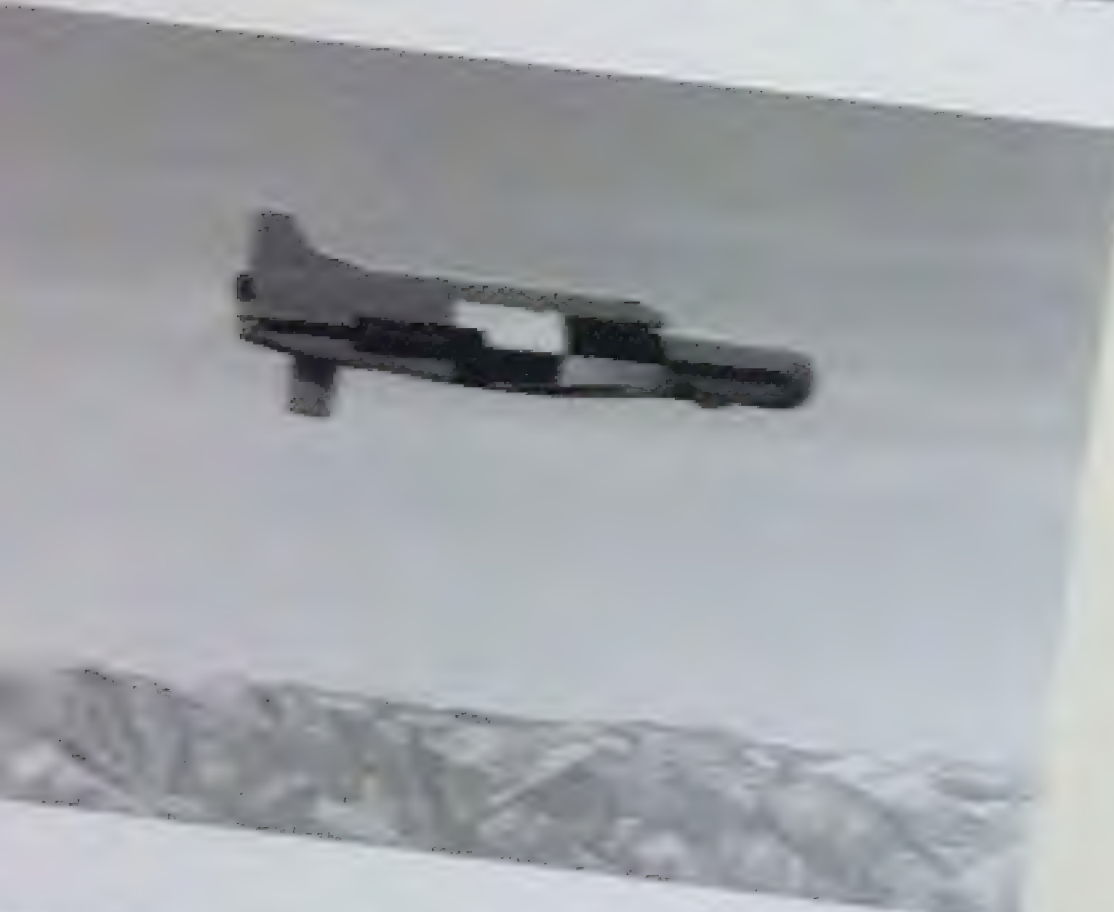
Annual Report

B/D IAF/CA-04



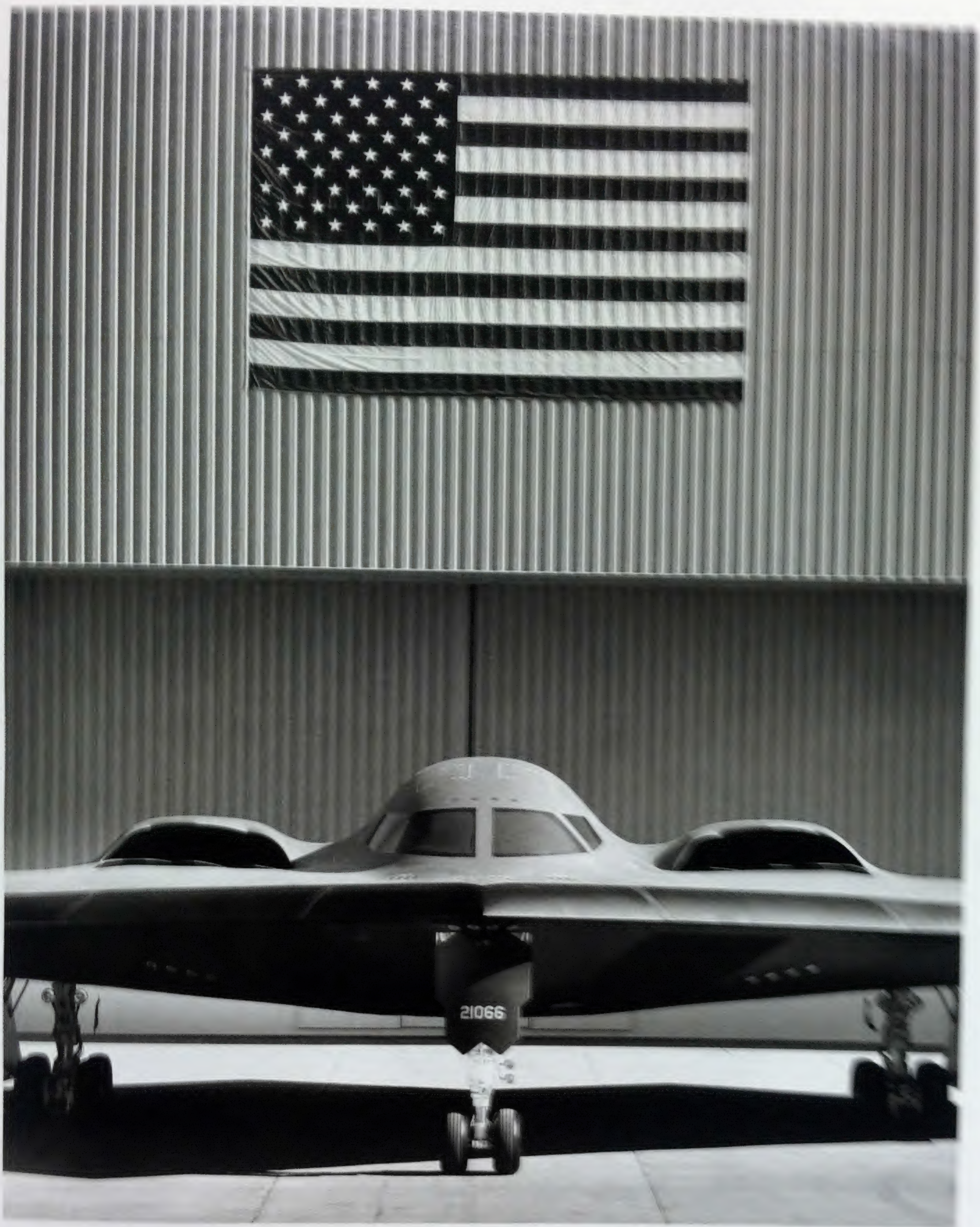
Early Northrop aircraft included: (a) The N-3PB Patrol Bomber; (b) The P-61 Black Widow radar-equipped night fighter; (c) The YB-49 flying wing; (d) The F-89 Scorpion, America's first all-weather interceptor in formation with the Snark, America's first intercontinental guided missile; (e) and the N-156F Freedom Fighter prototype that led to the F-5. (f) Jack Northrop, who began the company's 50-year tradition of innovation. (g) Northrop has been providing support services to the military and other Government agencies for more than two decades. (h) Early Northrop designers would marvel at today's three-dimensional electronic databases used on the B-2 and the YF-23 Advanced Tactical Fighter (ATF). (i) Nearly every USAF pilot has earned his or her wings in the T-38. Design innovations and handling qualities have made the Talon a "forgiving" airplane and consistently the world's safest supersonic aircraft.





(j) Former Northrop President Whitley Collins with the Snark, which incorporated the world's first stellar inertial guidance system. (k) The F-20's advanced digital avionics and its reliability and maintainability innovations provided invaluable experience for the ATF program. (l) Northrop has become the largest producer of strapdown guidance for missiles, including AMRAAM, America's newest radar-guided air-to-air missile. (m) Northrop produces electronic countermeasures systems for the F-15, the B-52 and B-1B, certain F/A-18, F-16 and AV-8B aircraft, and for other classified applications. (n) Northrop employees on the 747 program have won 19 Pride in Excellence quality awards from The Boeing Company. (o) The Television Camera Set is a mission-essential system for Navy F-14 Tomcats. The company's passive sensors are in use by all branches of the U.S. armed services. (p) The inertial measurement unit for the MX Peacekeeper is the most accurate ballistic missile guidance system ever built. (q) Today's work in tactical missiles, including the versatile Tacit Rainbow, grew out of 40 years experience in unmanned aircraft and electronics. (r) Every American astronaut in the Mercury, Gemini and Apollo space programs was brought back safely with the Parachute Recovery System — a memorable symbol of Northrop's continuing commitment to quality and reliability. (s) Tom Jones after a 1960 check-out flight in a T-38 — 3,806 T-38s and F-5s have been built in one of America's most successful aircraft programs.

provide reliable
on schedule, as the



The B-2 Bomber has begun a new era in military airpower and

...most visibly in the last 30 years.

In the widely-acclaimed T-38 and F-5 series, the production of which is only now drawing to a close with the delivery of the 3,806th aircraft, or in the company's \$1 billion military electronics business, which was foreseen and established as a separate business center in the mid-1950s, Northrop has consistently followed certain basic patterns which prevail today: select and invest in high-leverage technologies that will have the broadest possible effect on military capability; design from the beginning for reliability and supportability — and thus real, not simply apparent, military value; and then invest in the research facilities and production plant and equipment needed to develop the system and deliver it affordably.

The B-2 Strategic Bomber

The B-2 strategic bomber, which will lead American airpower into the 21st century, is the latest and certainly the most dramatic demonstration of those long-standing Northrop concepts at work.

The B-2 is the most sophisticated aircraft weapon system ever conceived. The Air Force recently described it simply:

"This aircraft combines all the best attributes of a penetrating bomber — long range, efficient cruise, heavy payload, all altitude penetration capability, accurate delivery, and reliability and maintainability. Added to all that is the greatly enhanced effectiveness and versatility provided by its stealth characteristics.

"The manufacturing technologies pioneered by the Northrop team will revolutionize America's aerospace industries and significantly enhance our industrial base."

The B-2 program's technological advancements on the ground revolutionized the way risk can be reduced in aircraft development programs, even a program as far-reaching as the B-2. Computerized research, development, testing, and simulation facilities that did not exist for any previous generation of aircraft were brought together for the first time in the B-2 program. These facilities made it possible to conduct the most comprehensive test and evaluation program on the aircraft and its systems even before first flight.

By March 1989, the B-2 had accumulated more than 20,000 hours in wind tunnel tests, and well in excess of 44,000 hours of test and evaluation of the avionics system, 6,000 hours for the flight control systems, and 16,000 hours of engineering development testing of human factors, cockpit avionics, and flight controls. Strategic Air Command (SAC) pilots have flown the B-2 for thousands of hours in aircraft mission simulation facilities unsurpassed in the aerospace industry.

SAC crew chiefs and maintenance technicians worked side by side with the Northrop design team from early on in the program. Their "hands-on" experience and advice, together with other reliability and maintainability considerations including combat readiness and life-cycle costs, were integrated into the design at every stage and into production of the first airplane.

Although the B-2 is the most sophisticated aircraft in the world, its cockpit design and work-reducing complement of computers enable it to carry out its missions with a two-man crew — half the crew size of the B-1B bomber and one-third that of the B-52 bomber. By reducing crew requirements for the entire B-2 fleet, the Air Force will save hundreds of millions of dollars in personnel and related costs over the long operational life of the aircraft. It is but one example of the operational economies available through the advanced technologies in the B-2.

"The bottom line is that the B-2 is not just a technical advance. It is a revolution in combat capability. It will be to conventional warplanes what jet engines were to propellers."

Commander-in-Chief, Strategic Air Command, December 1988

The first B-2 is a production aircraft. There are none of the prototypes that have been required in previous generations of aircraft. The methodical, ten-year development program was organized from the outset to take advantage of computerization and simulation and testing techniques to discover and resolve the major problems that in previous aircraft programs would have gone undetected until prototypes were built and flown. As problems — whether of the performance, production, or operational support variety — were discovered during the careful course of the B-2 program, solutions were developed and built into the production aircraft.

As a result of this approach, most of the risk normally associated with a major aircraft program has been systematically eliminated during the development program. The Air Force and the industrial team know more about the B-2 bomber than they have known about any new aircraft in history at this stage of development.

Design changes, which in previous new aircraft were left to be accomplished as complicated and expensive modifications on the production line and retrofits in the field, have already been incorporated in the B-2 as a result of the B-2's milestone-paced development program. The changes have been integrated into the B-2 design and verified. Production tooling has been developed, built, and is now at work producing B-2s.

The next aircraft are now being assembled on the same production tooling that built the first one. Five of the first six B-2 flight vehicles are operational aircraft that will be assigned initially to flight validation duties at Edwards Air Force Base, California. Ultimately, they will be deployed to the Strategic Air Command. Additional operational aircraft are in low-rate initial production.

The Air Force has announced that the first B-2 operating base will be at Whiteman Air Force Base, Missouri, with delivery of the first aircraft to the base in 1991.



Northrop, as prime contractor, is responsible for overall system design and integration. There are approximately 14,000 Northrop men and women working on the B-2 program throughout the company. Nationwide, the B-2 program is supported by tens of thousands of men and women at Boeing Advanced Systems Company in Seattle; LTV Aircraft Products Group in Dallas; Hughes Radar Systems Group in El Segundo, California; at the General Electric Aircraft Engine Group in Cincinnati, the major industrial participants in the program; and our suppliers and subcontractors in 46 states.

As the B-2 bomber moved into initial production, the Air Force recently summarized the strategic urgency of the program:

"The acquisition of the B-2 is based solidly on military objectives . . . to be able to hold at risk a wide range of critical targets in the Soviet Union and thereby deter aggression against the U.S. and our allies.

"Increasingly sophisticated Soviet defenses threaten the viability of the manned penetrating bomber to do this in the next century and without the B-2 our deterrent posture will be seriously undermined."

The basic issue regarding the B-2 is the pace at which the Air Force can take advantage of the investment that has already gone into the program, and the extraordinary results of that investment.

Nearly one-third of the program's total anticipated cost has already been invested by the Air Force. The lengthy program has been carefully paced by the achievement of milestones as each of many new technologies was explored, developed, proven, and integrated into the weapon system. The production tooling required for the planned delivery schedule has already been developed and built.

The issue today, as Air Force Chief of Staff General Larry D. Welch noted recently, is the investment of the "remaining funds required to field the aircraft now that the great majority of the development effort is successfully completed."

Only recently has Northrop been able to describe some of the program's remarkable manufacturing innovations and efficiencies. Because they represent such advances, most details pertaining to the aircraft itself and certain manufacturing processes remain classified as a matter of Government policy.

The B-2's complex structural design, its close tolerances for fabrication and assembly, and extensive use of diverse composite materials required innovations in manufacturing technologies that, in many ways, have turned out to be as revolutionary as the B-2 itself.

No innovation has been more important than the development and implementation of Northrop's three-dimensional computer database and supporting communications network. This first-of-a-kind system provides Northrop and its subcontractors with levels of precision and efficiency in design, manufacturing, test, logistics support, and coordination that were simply impossible to achieve before recent advances in computers and the development by Northrop of a common database. The database contains every detail of the B-2's design, as well as engineering, manufacturing, and support specifications — from the most intricately shaped surface of the aircraft to the nuts and bolts needed to build it.

By going directly from the electronic three-dimensional database to the manufacture of production tooling, the program avoided the expense of building master tools for prototype proofing. The precise geometry and parts measurements stored in the master database also helped to reduce numerically-controlled machine programming time from weeks to days. The system produced a six-to-one reduction in typical first-time-fit errors upon assembly; a 97 percent success rate on the first installation of tubing, fluid systems, and mechanical systems, compared with traditional rates of 60 percent.

Engineering changes were accomplished two to five times faster and with more precision than with conventional drafting or drawing methods. And for the first time in the history of aviation, the database used for design and production is generating the technical manuals that will support operations on the flight line.

"The B-2 necessitated a rapid acceleration and massive deployment of manufacturing technologies and capabilities to a scale unequalled by any prior military aircraft program."

USAF official, DoD Conference, Atlanta, December 1988

Among other B-2 factory innovations that are revolutionizing American industrial manufacturing methods:

A half-million-square-foot integrated composite center, with an automated material-handling network, that manufactures composite products with less than four percent scrap, rework, or repair.

A new generation of automated computer-controlled laminating machinery that makes it possible and practical to produce large, contoured parts out of composite material. This breakthrough system has cut the lamination process from weeks to days and is saving millions of dollars for each aircraft.

An automated channel stringer manufacturing system for the fabrication of composite stiffeners for internal aircraft structure. The aerospace industry previously relied on labor-intensive manual methods to do this job. The technology embodied in this new system is producing a higher quality product and has already realized a two-thirds reduction in labor costs.

YF-23 Advanced Tactical Fighter

Work on the YF-23 prototypes of the Air Force's classified Advanced Tactical Fighter is more than half complete. The ATF is intended to be the Air Force's next-generation air-superiority fighter. In addition, the Navy is working to develop a variant of the ATF as its next-generation fighter.

Northrop and McDonnell Douglas, our partner and principal subcontractor, are building two aircraft prototypes and an avionics ground-based prototype for demonstration and

"The ATF will incorporate low-observable technology, supersonic cruise and maneuver and advanced avionics to yield lethality and survivability far superior to any current aircraft."

U.S. Air Force Presentation to the Congress, March 1989

validation under a 50-month fixed-price contract. The Northrop-McDonnell Douglas team is competing for the full-scale development phase of the program against a team led by Lockheed.

As prime contractor, Northrop is responsible for the overall design and system integration, and Northrop and McDonnell Douglas share about equally in the workload and the cost-sharing aspects of the program. Additionally, most of Northrop's planned expenditure of \$70 million in company-sponsored aircraft research and development in 1989 will be applied to the YF-23 program. Northrop last year invested \$87 million in aircraft research and development, principally for the YF-23.

The ATF is a very high-priority program for both Northrop and McDonnell Douglas. Although the performance and details of the ATF remain classified, Northrop can report that the program is on schedule, with assembly of the prototypes well under way.

F/A-18 Hornet Strike Fighter

Now in its 12th year of production, the versatile Hornet is serving with the U.S. Navy and Marine Corps and with the armed forces of Australia, Canada, and Spain. The F/A-18 production program now totals 1,494 Hornet shipsets, with 647 still to be delivered through 1996, including 40 ordered by Kuwait during 1988. Switzerland last year announced it would order 34 F/A-18s, a follow-on to the seven-year Swiss coproduction program for Northrop F-5s. The Swiss ordered 72 F-5s in 1976 and, as that program drew to a successful conclusion, reordered an additional 38 aircraft in 1981. The last Swiss F-5 was delivered in 1984.

A Northrop F/A-18 shipset consists of the 26-foot-long center and aft fuselage section, twin vertical stabilizers, and all associated subsystems. Northrop expects to deliver 99 shipsets to prime contractor McDonnell Douglas in 1989, compared to 123 delivered in 1988 and 141 in 1987. The decline in annual production reflects the gradual completion of deliveries to Australia, Canada and Spain.

When the 642nd F/A-18 shipset came off the Northrop line last month, it marked the beginning of a new era in aircraft assembly operations. That shipset was turned out on the world's first "paperless" computerized aircraft assembly line. Developed under the joint sponsorship of Northrop and the U.S. Navy, the new manufacturing system has

"Our objective is to ensure that we put to sea a modern and effective force capable of meeting all

commitments... no other aircraft more clearly represents progress toward our goal than the F/A-18."

Chief of Naval Operations, March 1988

transferred all assembly work instructions, quality assurance and inspection records, and every other piece of manufacturing documentation to an integrated computer network. The system eliminated more than 16,000 pages of paperwork that accumulated as each Hornet moved down the production line. Required documentation is stored electronically, and more than 1,000 Hornet assembly-line workers, supervisors, engineers, and inspectors now have instant access to the same, up-to-the-minute manufacturing information. The Defense Department expects the system to reduce costs on the F/A-18 by some \$20 million during the remaining production program.

AGM-136A Tacit Rainbow Missile System

Northrop's long experience in unmanned aircraft, avionics, strategic and tactical guidance, systems integration, and radar analysis has earned the company important responsibilities in the expanding field of "smart" weapons. Tacit Rainbow is one of Northrop's key programs in this new business area.

Tacit Rainbow is a multiservice "smart" missile system. It can patrol an area on its own and clear a safer path for aircraft by seeking and striking air defense radars. After completing a series of contractor flight tests earlier this year, the Tacit Rainbow system is to begin Air Force flight tests. Tacit Rainbow is one of the Northrop programs scheduled for delivery from the company's new \$130 million production center in Perry, Georgia. The highly automated facility is nearing completion.

Northrop focused its interests on missiles and "smart" weapons in 1987 when it made its Ventura Division, long known for its work in unmanned vehicles, a unit of the Aircraft Division. The importance of this business area was underscored last year with the establishment of the new position of Deputy General Manager within the Aircraft Division, solely responsible for missile activities.

The company's traditional line of unmanned aeronautical vehicles is the BQM-74C turbojet aerial target for the U.S. Navy, and the Chukar II and III for overseas customers. Late last year, Northrop won new contracts for 191 BQM-74C and Chukar III targets. Deliveries have begun and will continue into the early 1990s.

Management Discussion and Analysis of the Company's Financial Condition and the Results of Its Operations

Business Conditions

Northrop's aircraft, electronics and services industry segments are each a factor in the broadly defined aerospace industry. Like any business enterprise Northrop is subject to the usual rigors of the marketplace. It is also affected by the unique characteristics of the aerospace business and by certain factors peculiar to its own business mix.

Northrop is one of about a dozen major companies in the industry that compete for the relatively small number of large, long-term programs that characterize both the defense and commercial segments of the aerospace business. Northrop also competes for a relatively large number of smaller programs, mostly in the electronics area. Competition is intense but, at the same time, the nature of major aerospace programs and the fact that they are conducted under binding contracts mean that companies that perform well can enjoy the benefits of program continuity unknown in many industries. Thus, intense competition and long operating cycles are both characteristic of the industry's - and Northrop's - business.

Individual companies prosper in this competitive environment according to their ability to develop and market innovative products and, of increasing importance, their ability to provide the people, facilities, equipment and financial capacity needed to deliver those products with maximum efficiency. It is also important to maintain, as the company has, sources for raw materials, fabricated parts, electronic components and major subassemblies. In this manufacturing and systems integration environment, effective oversight of subcontractors and vendors, similar to managing internal operations, is vital to success. Northrop's operating policies are designed to enhance these capabilities. The company also believes that it maintains good relations with its employees, a relatively small number of whom are covered by collective bargaining agreements.

U.S. Government programs in which Northrop either participates or strives to participate, must compete with other programs for consideration during our national budget formulation and appropriation processes. The country's desire to reduce the budget, particularly defense. Nevertheless, the company does not believe that there is a high probability of its major programs being cancelled. However, funding limitations could result in one or more existing or emerging programs being scratched out or cut back. More significant has been the Government's recent tendency to meet budget resourcings by per-

suading private contractors to finance a portion of the development costs of new systems on a fixed-price or capped cost reimbursement type basis. Similar Government policies on required contractors to invest in single-purpose special tooling and to relinquish certain data rights. Moreover, the Government at the same time has taken steps to reduce certain for margins, reduce progress payments, and redefine and restrict the allowability of various costs of standard commercial business. A number of studies are beginning to report that the ultimate impact of these policies, while not yet clear, will mean a diminution of our country's defense industrial base. Some defense procurement officials are beginning to express

Net Sales
U.S. Government
Foreign Military
\$ in billions

use the harmful long-term consequences that some of these initiatives will have on the ability of the total defense industrial base – large and small contractors alike – to continue to serve the nation's military security needs.



Northrop conducts most of its business with the U.S. Government, principally the military services of the Department of Defense, and, through it, a diminishing amount with foreign governments. Prime contracts with various agencies of the U.S. Government and subcontracts with other prime contractors are subject to a profusion of procurement regulations, with noncompliance found by any one agency possibly resulting in such things as fines, penalties, debarment or suspension from receiving additional contracts with all agencies. Moreover, these contracts may be terminated at the Government's convenience. In the event of termination for convenience, however, contractors are protected by provisions covering reimbursement for costs incurred as well as the payment of any applicable fees or profits. In its commercial-type endeavors, the company assumes the risks of termination to the extent not covered by the terms of contracts with customers.

→ The Government is conducting a nationwide investigation into general defense procurement practices. The company cannot predict whether this investigation will result in any changes in the Government's procurement practices or the company's internal policies or practices. The Government is also conducting investigations into the company's business in South Korea. Based on available information, the company does not reasonably expect that any fines or penalties resulting from these investigations are likely to have a material adverse affect on the company and its operations.

Defense contractors that are either indicted, convicted, or determined not to be responsible contractors may be suspended or debarred from government contracting for some period of time. Given the company's dependence on government contracting, suspension or debarment could have a material adverse affect on the company's future.

As to environmental matters the company has been designated under a federal law as a "potentially responsible party" with respect to certain waste disposal sites. Because neither the amount of cleanup costs nor the method of their allocation among all designated potentially responsible parties at these sites has been determined, the company cannot predict its liability for cleanup costs. While federal, state and local laws relating to the protection of the environment affect the company's manufacturing operations, the cost of compliance has, as yet, not been material.

A-05

Descriptions of Northrop's principal products by industry segment are given in the Operations Review section of this report (pages 14 to 31). In this section of the report, F/A-18, F-5E/F-5F/RF-5E and 747 refer to major aircraft programs. The Advanced Tactical Fighter (ATF) is a prime "best efforts" research and development type contract, with the U.S. Government. Along with our principal subcontractor, the McDonnell Douglas Corporation, we are in the midst of performing this prototype building, demonstration and validation effort for the ATF. ECM denotes electronic countermeasures equipment. MX Peacekeeper refers to Northrop's work on guidance systems components for this U.S. Air Force ballistic missile.

The category "all other" includes the B-2 strategic bomber, many details of which are classified, along with the balance of the company's numerous other contracts classified and unclassified.

In the industry segment data (beginning on page 46), the B-2, F/A-18, ATF, F-5E/F-5F/RF-5E and 747 are included in the aircraft segment, and ECM and MX Peacekeeper are included in the electronics segment.

Measures of Volume

Contract Acquisitions

	1988	1987	1986	1985	1984
F/A-18					
747	\$ 464	\$ 573	\$ 101	\$1,547	\$ 286
ECM	734	90	306	198	165
MX Peacekeeper	248	470	501	481	466
ATF	223	238	363	257	576
F-5E/F-5F/RF-5E	248	86	50		
All other	35	67	112	177	454
	2,884	6,181	3,731	3,024	2,484
	\$4,836	\$7,705	\$5,164	\$5,684	\$4,431

Contract acquisitions tend to fluctuate widely and are determined by the size and timing of new and add-on orders. The effects of multi-year orders and/or funding can be seen in the highs and lows shown in the preceding table.

In 1988, 93 F/A-18 fuselage assemblies were ordered, compared with 109 in 1987. Multi-year funding, covering 1986 and 1985, for 317 F/A-18s was received during 1985. For 1984, orders for 66 F/A-18s were recorded, compared with 109 and covers deliveries through 1989. Contract acquisitions in 1986 included orders for 50 shipsets, whereas 1985 and 1984 included orders for 25 shipsets each.

In a dual-sourcing competition held early in 1988 for inertial measurement units (IMUs) of the MX Peacekeeper, Northrop was awarded 70 percent of a total order, or 21 out of 30 IMUs, with initial funding of \$78 million covering production into early 1991.

MX Peacekeeper acquisitions in 1987 included a \$186 million contract for the production of 31 IMUs. In 1986 and 1985 funding was received for a production buy of 30 units, full-scale development, support equipment and spares. During 1984, 52 IMUs were ordered.

In 1987, the company received a \$2 billion contract for the B-2 program. This, along with other funded amounts, appears in the "all other" category.

Year-to-year sales vary less than contract acquisitions, and reflect performance under new and ongoing contracts. A small decline in sales in 1989 is presently foreseen.

Net Sales

	1988	1987	1986	1985	1984	\$ in millions
F/A-18						
747	\$ 704	\$ 792	\$ 752	\$ 880	\$ 623	
ECM	345	209	279	239	125	
MX Peacekeeper	343	477	471	129	253	
ATF	359	290	328	239	232	
F-5E/F-5F/RF-5E	248	132	4			
	49	64	187	991	369	
All other	3,749	4,089	3,587	2,977	2,086	
	\$5,797	\$6,053	\$5,608	\$5,057	\$3,688	

Sales under the F/A-18 program declined in 1988 with the delivery of 123 fuselage assemblies. In 1987, the company delivered 141 assemblies, compared with 134 in 1986, 137 in 1985 and 99 in 1984. In 1989, 99 units are expected to be delivered.

Deliveries of 747 center fuselages were 39 in 1988, 25 in 1987, 37 in 1986, 30 in 1985 and 15 in 1984. Sixty fuselages are expected to be delivered in 1989.

The number of F-5E and F-5F aircraft delivered in each year from 1988 to 1984 were two, two, 15, 56, and 53, respectively. Two RF-5Es were delivered in 1986 and four were delivered in each of the years 1985 and 1984. In 1989, the company plans to deliver the final three F-5s.

Electronics segment revenues fell despite higher MX Peacekeeper sales which followed the company's return to contract delivery schedule. The decline was brought about principally in the ECM product line where design difficulties encountered during the transition of several programs from engineering to production resulted in increased costs and sales slipping out of 1988. Electronics segment results for 1987 included \$26 million of sales and \$1.3 million in operating profit from Wilcox Electric, Inc., a subsidiary which was sold as of December 31, 1987.

The Services segment results declined for 1988 following the sale of Northrop Services, Inc. as of June 30, 1988. This subsidiary contributed \$35.1 million in sales and \$1.5 million in operating profit in 1988.

Increased sales in the "all other" category up until 1988, resulted from, among other things, a significantly higher amount of customer-sponsored research and development activity, including but not limited to the B-2. During 1988 the decline in B-2 research and development revenues as the program progressed was partially offset by higher revenues from the initial low-rate production contract.

The company's year-end funded backlog consists of the previous year's ending backlog plus the current year's contract acquisitions less the current year's Backlog is converted into the following year's sales as deliveries are made under contract terms. It is expected that approximately 75 percent of the 1988 year-end backlog will be converted into sales in 1989.

Total U.S. Government orders, including those made on behalf of foreign governments, comprised 87 percent of the backlog at the end of 1988, compared with 88, 89 and 84 percent at the end of each of the preceding years, respectively. Overseas customers and the U.S. Government acting on behalf of foreign governments accounted for 9 percent of the backlog at the end of 1988, compared with 9 percent in 1987, 16 percent in 1986, 22 percent in 1985 and 24 percent in 1984. The remaining percentage at each year-end consisted of direct foreign and commercial business.

Funded Order Backlog

	1988	1987	1986	1985	1984
F/A-18	\$ 695	\$ 935	\$1,154	\$1,805	\$1,139
747	430	41	160	133	174
ECM	536	631	638	608	56
MX Peacekeeper	355	491	543	508	491
ATF	55	69	66	141	356
F-5E/F-5F/RF-5E	2,787	3,652	1,560	1,416	1,369
All other	\$4,858	\$5,819	\$4,167	\$4,611	\$3,984

Measures of Performance

The primary cause of the lower operating profit in the aircraft segment in 1988 was a \$150 million provision for an expected loss in the performance of certain classified long-term fixed-price research and development contracts for which operating margin had not previously been recorded. Recognition of the expected loss was made early in 1989 and therefore reflected in the fourth quarter of 1988. Included in the calculation of this provision is \$125 million in anticipated additional contract value. The contracts did not involve settlement of the various contractual issues, the eventual outcome remains uncertain. As long as we remain mutually committed to making these programs successful it is considered unlikely that the provision will have to be materially adjusted or that the programs would be terminated; however the possibility remains.

In 1987 the company lowered the amount of operating margin ultimately expected to be earned through completion of the B-2 research and development contract. Under the company's accounting policy, it recognized \$124.3 million as the cumulative effect on current and prior periods of changes in both estimated final costs and fees. Based on the revised estimate of the contract's higher final cost and lower margin, the rate of margin was lowered in 1987 from that used prior to 1987. This resulted in 1987's operating

margin on the contract being \$70 million lower than that recorded in 1988 and \$60 million lower than that of 1986. The effect of a similar but smaller adjustment made in 1986 was to reduce that year's operating margin \$127 million from that of 1989.

During 1988, the higher margin rate achieved on the P/A-18 plus the higher amount of margin accompanying increased 747 deliveries more than offset the lower margin rate earned on lower P-3 sales. Also included in 1988 is a \$12.7 million charge related to the dissolution of a teaming agreement for the development of a supercruise low altitude target, and \$12.1 million of self-insurance costs deemed unallowable by the government of which \$8.7 million reduced the operating profit of the aircraft segment. In 1987 somewhat higher margin rates achieved on the P/A-18, 747 and P-3 programs were not sufficient to offset the effect of lower sales volume on the 747 and P-3 programs. Improved performance on P/A-18 contracts during 1986, combined with increased deliveries and performance improvements on 747 work, about offset the effect of lower P-3E and P-3F deliveries in 1986.

Operating units of the aircraft segment expended approximately \$87 million in new, advanced technology projects, mainly the ATF, during 1988, compared with \$66 million in 1987, \$32 million in 1986, and \$41 million in 1985. Some of these projects are classified. The company in 1989 intends to make expenditures of approximately \$70 million, mainly in the pursuit of winning the next phase of the ATF program. While contractual requirements of the ATF could conceivably be met within the \$671 million original contract value, the company is spending more than this amount over the 30 month period of prototype building and testing, which began in late 1986. The company continues to follow its policy of recording all known losses when determined in the performance of its contracts with customers. However, this practice is not appropriate for the ATF program. The amount and timing of ATF expenditure commitments are at the sole discretion of the company. The company will take into consideration the evolution of the design, management authorized enhancements, and its assessment of its competitive posture as the program matures over the next two years. The amount of company-sponsored research and development (R&D) expenditures made in excess of contract funding is included in noncontract amounts reported on page 48, the increase this year stemming largely from the ATF. The amounts shown for the years 1984 through 1986 included the R&D portion of total expenditures made for the now concluded P-20 project. Total P-20 expenditures were \$236 million in 1986, \$142.6 million in 1985, and \$148.5 million in 1984.

Electronic countermeasures systems in the past have been the largest single contributor to the operating profits of the electronics segment. However, operating profits in the segment as a whole declined in 1988 as a result of loss provisions made on several fixed-price development contracts, mainly in the electronics countermeasures product line. The ECM business has grown rapidly in recent years. New contracts require more advanced designs than predecessor systems while being performed on a fixed price basis. Most design difficulties encountered during the transition of several of these programs from engineering to production have now been resolved. These ECM loss provisions and lower sales volume on the ALQ-161 system for the B-1B combined to produce a \$51.6 million decline in operating profit from 1987.

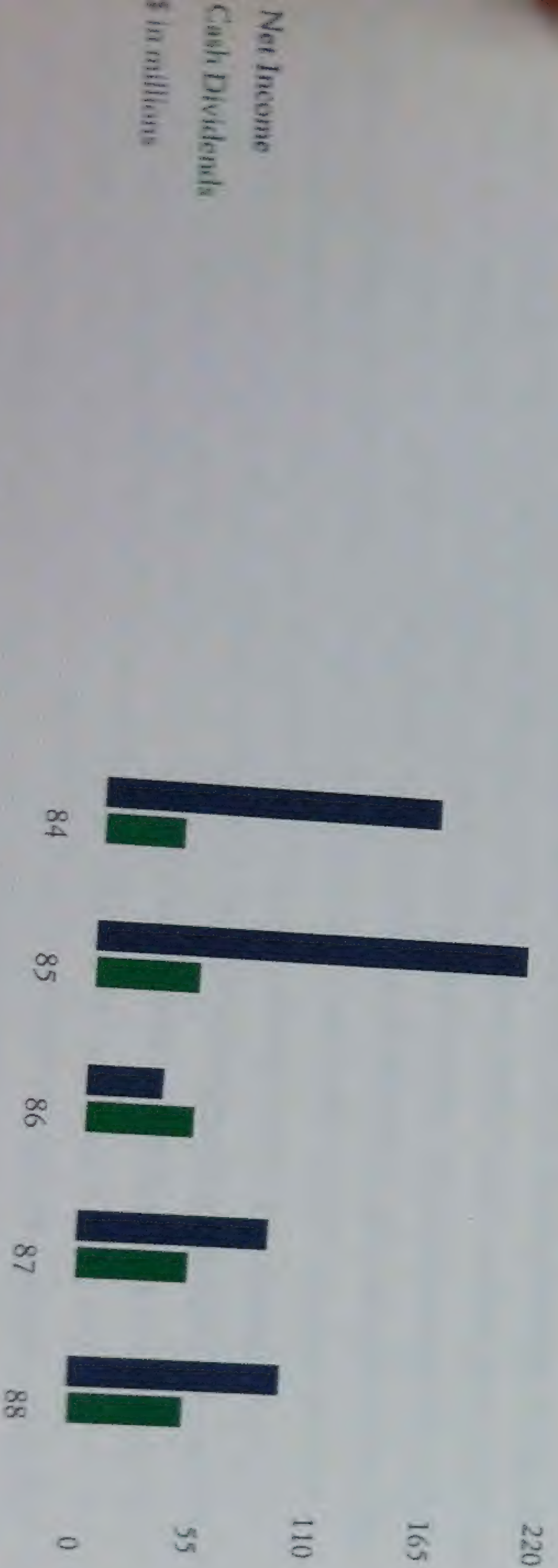
In 1987 a number of problems affected the Electronics Division, where in-
erial measurement units for the MX Peacekeeper missile are produced. In 1988 the

MX program, despite increased costs, was profitable as sales increased by making delivery of new and field return IMUs at a rate which met or exceeded customer requirements. Deliveries of IMUs in 1987 were behind contract schedule and sales were lower than the year before. Consequently, costs rose as a percent of sales, depressing margin rates. In addition, costs were incurred and provisions made for certain estimated costs arising from examinations and audits conducted in the course of making operational changes at the division. Also, losses were incurred by the Electronics Division on an engine diagnostic system for the F-14.

Also benefiting operating profits in 1988 was a reduction of \$7 million in investments for new technology projects from that spent in 1987, which in turn followed a \$12 million reduction made in 1987 versus 1986. The higher volume of sales in the electronics segment in 1986 was responsible for the higher amount of operating profit in this segment. The lower rate of profit of the segment was due principally to investments aggregating about \$23 million in new technology projects in the Navigation and Control, and ECM areas along with the small loss incurred in the Sensor Systems area in 1986. In 1985 about \$18 million was invested in new technology projects.

The primary contributor to operating profit in the services segment through 1986 was the Peace Hawk/ATTs program. The rate of operating profit for the services segment in 1985 and 1984 was due to favorable cost performance on the Peace Hawk/ATTs program. With the completion of this successful program in 1986, operating profit for the services segment declined sharply. In 1987, recognition was made for a \$5 million sales and margin reduction as the result of the settlement of the final price of this project, and in 1988 a defective pricing dispute was settled for \$4.4 million.

Interest expense has risen over the last five years while the company borrowed additional funds on a short-term basis. Interest expense in 1988 also included two nonrecurring items - \$8.5 million for additional interest as a result of the final determination and payment of interest in the Triad arbitration matter, and \$8.3 million in connection with the self-insurance settlement with the Government.



The company's effective federal income tax rate for 1988 represented a benefit of 42.7 percent, versus a tax rate of 31.4 percent in 1987. See pages 55 and 56 for a detailed presentation of the company's tax provision. The provisions of the Tax Reform Act of 1986 significantly reduced the cash flow benefits of the completed contract method of accounting for long-term contracts. The Revenue Act of 1987 even further reduced those

benefits, and the Technical and Miscellaneous Revenue Act of 1988 virtually eliminated them for new contracts.

Measures of Liquidity and Capital Resources

Accounts receivable and inventoried costs increased three percent in 1988, and followed 36 percent growth in 1987. Progress payments as a percentage of gross inventoried costs at 47 percent was virtually unchanged from 1987. The rate would have been 58 percent at the end of 1987, the same as at December 31, 1986, had it not been for the withholding of \$145 million in progress payments on the MX Peacekeeper program by the U.S. Government as a result of the company then having fallen behind contract delivery schedules. The Government is no longer withholding progress payments on MX Peacekeeper work. The effects of so-called government initiatives to decrease progress payment rates have been seen throughout the defense industry, and those initiatives stemming from the practice of demanding that R&D be contracted for on a fixed-price basis are now beginning to be felt. Cash outflow from currently accrued loss provisions will affect future periods. The increased investment in accounts receivable and inventory had been the primary cause of the unfavorable trend in net cash provided by operating activities through 1987. Following the overall contraction in business volume in 1988, an inflow from operations of \$97.6 million contrasted with an outflow of \$67.2 million in 1987 (see detailed cash flow information on page 44). This outcome, combined with about \$80 million from the sale of assets, and expenditure of \$254.2 million for property, plant and equipment brought the need to borrow an additional \$107.4 million in 1988. Since the middle of 1984, the company has been supplementing cash generated by operations with short-term borrowings. In November 1988 the company concluded a private placement transaction whereby \$550 million of intermediate-term fixed-rate debt was obtained and used to replace an equal amount of short-term floating-rate debt. Additional borrowing needs are being met through the use of short-term credit lines and the company's \$750 million credit agreement.



Cash generated from operations and short-term borrowings is expected to be sufficient in 1989 to finance capital expansion projects and company-sponsored research and development programs. Non-contract research and development expenditures including ATF are expected to approximate \$200 million in 1989 compared with \$206 million in 1988. The 1989 estimate includes the approximately \$70 million planned for Aircraft seg-

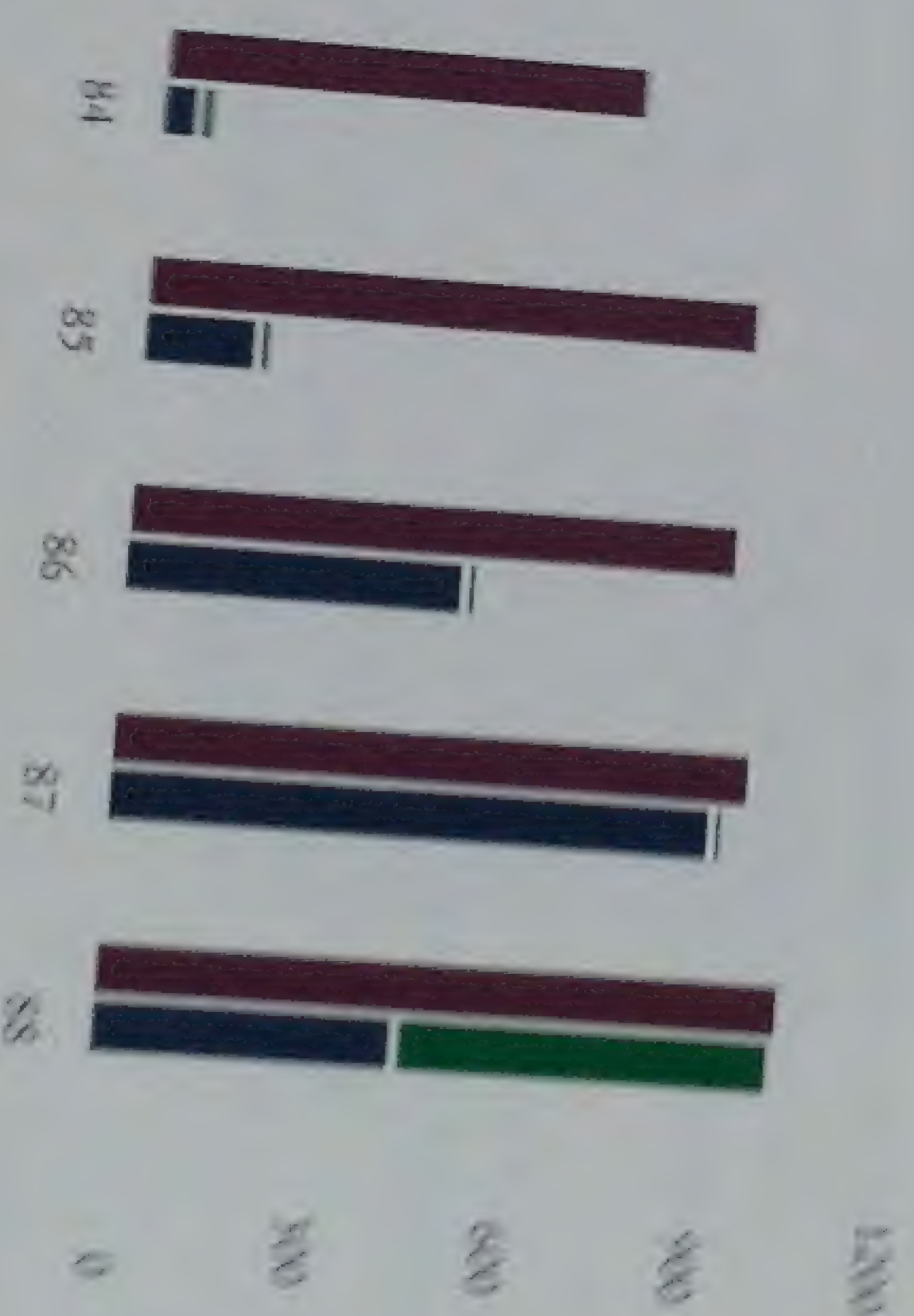
ment company sponsored research and development, including the ATF, and a small amount for the Electronics segment.

Capital expenditure commitments at December 31, 1988, were approximately \$443 million including \$9 million for environmental control and compliance projects. The Operations Review section of this report cites a number of equipment purchase enhancement programs at the company's operating units. Capital expenditures in 1989 are expected to be approximately \$250 million.

The continued high level of cash outlay in 1989 will enable the company to provide the productive capacity to perform its existing contracts, prepare for future contracts, and conduct research and development in order to pursue developing opportunities, principally the Advanced Tactical Fighter. These expenditures will continue to curb short-term liquidity and profitability with the intention of improving the long-term growth and profitability of the company.

Some important indicators of short-term liquidity are cash generated from operations, and financing and investment activities shown on page 44. Also, on page 48 are other important indicators—the trend in working capital and the ratio of current assets to current liabilities, and the ratio of long-term debt and capital leases to shareholders' equity.

Shareholders' Equity
Liabilities (Short-term/Long-term)
\$ in millions



To ensure long-term liquidity in the presence of large budgeted amounts for investments in new plant and equipment, as well as ongoing new product development programs, the company may find it necessary to obtain capital from such sources as: unused borrowing capacity under the \$750 million credit agreement, the sale of assets, sale and lease back of operating assets, and meeting future expansion requirements by leasing rather than purchasing.

Consolidated Statement of Assets and Liabilities

December 31
Assets
Current assets:
Cash
Accounts receivable
Inventoried costs
Prepaid expenses
Total current assets
Property, plant and land and land improvements
Machinery and other
Leasehold improvements
Accumulated depreciation
Other assets
Liabilities and Shareholders' Equity
Current liabilities:
Notes payable to Trade accounts Payable
Accrued employee advances on contract
Income taxes payable
Deferred income taxes
Other current liabilities
Total current liabilities
Long-term obligations
Deferred income taxes
Shareholders' equity:
Paid-in capital
Preferred stock
Common stock issued and outstanding
Retained earnings
Unvested employee stock options

Consolidated Statements of Financial Position

Northrop Corporation and Subsidiaries

December 31	1988	1987	1986	1985	1984
	\$ in millions				
Assets					
Current assets					
Cash	\$ 3.6	\$ 5.0	\$ 4.8	\$ 7.1	\$ 3.7
Accounts receivable	954.5	905.2	620.3	492.8	306.7
Inventory costs	619.3	623.6	505.9	405.9	418.0
Prepaid expenses	37.2	32.9	29.5	24.9	15.0
Total current assets	1,614.6	1,566.7	1,160.5	930.7	743.4
Property, plant and equipment at cost:					
Land and land improvements	116.9	116.4	114.4	111.2	105.6
Buildings	783.9	716.4	666.1	615.9	575.5
Machinery and other equipment	1,857.5	1,715.2	1,561.7	1,282.1	981.5
Leasehold improvements	60.7	54.5	45.9	36.5	19.3
Accumulated depreciation and amortization	2,819.0	2,602.5	2,388.1	2,045.7	1,681.9
	(1,322.9)	(1,105.2)	(901.0)	(694.4)	(510.9)
Other assets	1,496.1	1,497.3	1,487.1	1,351.3	1,171.0
	28.5	59.6	51.2	50.7	42.1
	<u>\$ 3,139.2</u>	<u>\$ 3,123.6</u>	<u>\$ 2,698.8</u>	<u>\$ 2,332.7</u>	<u>\$ 1,956.5</u>
Liabilities and Shareholders' Equity					
Current liabilities:					
Notes payable to banks	\$ 446.0	\$ 888.6	\$ 499.9	\$ 164.0	\$ 43.4
Trade accounts payable	461.1	365.4	341.5	310.9	233.7
Accrued employees' compensation	149.6	153.8	142.6	165.6	149.7
Advances on contracts	44.4	38.2	20.0	44.1	187.0
Income taxes payable	5.5	26.0	34.4	46.0	25.3
Deferred income taxes	300.2	449.3	431.9	449.5	331.5
Other current liabilities	87.6	132.1	223.5	151.3	164.4
Total current liabilities	1,494.4	2,053.4	1,693.8	1,331.4	1,135.0
Long-term obligations	577.6	31.4	47.8	51.0	50.3
Deferred income taxes	63.6	91.3	58.5	51.3	46.4
Shareholders' equity:					
Paid-in capital					
Preferred stock, 10,000,000 shares authorized and none issued					
Common stock, 200,000,000 shares authorized, issued and outstanding:					
1988 — 46,895,897; 1987 — 46,843,207;					
1986 — 46,578,034; 1985 — 46,298,621;					
1984 — 46,110,787	194.7	190.8	176.8	161.6	150.7
Retained earnings	825.6	777.8	740.9	755.5	596.7
Unvested employee restricted award shares	(16.7)	(21.1)	(19.0)	(18.1)	(22.6)
	1,003.6	947.5	898.7	899.0	724.8
	<u>\$ 3,139.2</u>	<u>\$ 3,123.6</u>	<u>\$ 2,698.8</u>	<u>\$ 2,332.7</u>	<u>\$ 1,956.5</u>

The accompanying notes are an integral part of these financial statements.

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Consolidated Statements of Income

Northrop Corporation and Subsidiaries

Year ended December 31	1988	1987	In millions, except per share			
			1986	1985	1984	
Net sales	\$5,797.1	\$6,052.5	\$5,608.4	\$5,056.6	\$3,687.8	
Cost of sales						
Operating costs	5,257.6	5,357.7	4,985.9	4,205.4	3,005.5	
Administrative and general expenses	514.3	527.6	551.7	543.4	438.9	
Operating margin	25.2	167.2	70.8	307.8	243.4	
Other income(deductions):						
Claim settlement						
Interest income	2.2	2.0	2.2	2.2	7.6	
Other, net	17.2	18.7	5.4	5.5	(1.5)	
Interest expense	(98.5)	(50.5)	(28.9)	(17.4)	(7.5)	
Income(loss) before income taxes and cumulative effect of accounting change	(53.9)	137.4	49.5	348.1	242.0	
Federal and foreign income taxes(benefit)	(23.0)	43.2	8.3	133.7	75.1	
Income(loss) before cumulative effect of accounting change	(30.9)	94.2	41.2	214.4	166.9	
Cumulative effect on prior years of change in accounting for income taxes						
Net Income	135.1					
Weighted average common shares outstanding	\$ 104.2	\$ 94.2	\$ 41.2	\$ 214.4	\$ 166.9	
Earnings(loss) per share before cumulative effect of accounting change	47.0	46.8	46.5	46.3	45.9	
Cumulative effect on prior years of change in accounting for income taxes, per share	\$ (.65)	\$ 2.01	\$.89	\$ 4.63	\$ 3.63	
Earnings per share	2.87					
	\$ 2.22	\$ 2.01	\$.89	\$ 4.63	\$ 3.63	

Consolidated Statements of Changes in Shareholders' Equity

Northrop Corporation and Subsidiaries

\$ in millions, except per share

Year ended December 31	1988	1987	1986	1985	1984
<i>Paid-in Capital</i>					
At beginning of year	\$ 190.8	\$ 176.8	\$ 161.6	\$ 150.7	\$ 133.3
Employee stock awards and options exercised, net of forfeitures	3.9	14.0	15.2	10.9	17.4
At end of year	194.7	190.8	176.8	161.6	150.7
<i>Retained Earnings</i>					
At beginning of year	777.8	740.9	755.5	596.7	471.1
Net income	104.2	94.2	41.2	214.4	166.9
Purchase of 40,000 shares	(56.4)	(56.2)	(55.8)	(55.6)	(41.3)
Cash dividends	825.6	777.8	740.9	755.5	596.7
At end of year					
<i>Unvested Employee Restricted Award Shares</i>					
At beginning of year	(21.1)	(19.0)	(18.1)	(22.6)	(27.5)
Grants, net of forfeitures	1.0	(6.2)	(4.9)	(.3)	(8.8)
Amortization	3.4	4.1	4.0	4.8	13.7
At end of year	(16.7)	(21.1)	(19.0)	(18.1)	(22.6)
Total shareholders' equity	\$1,003.6	\$ 947.5	\$ 898.7	\$ 899.0	\$ 724.8
Book value per share	\$ 21.40	\$ 20.23	\$ 19.29	\$ 19.42	\$ 15.72
Cash dividends per share	1.20	1.20	1.20	1.20	.90

The accompanying notes are an integral part of these financial statements.

in MUVS. These fourth quarter factors resulted in a small amount of operating margin being earned which in turn was insufficient to cover the quarter's interest expense and the \$17 million fine discussed on page 58 under Contingencies.

	\$ in millions, except per share			
	1988 Quarters			
	4	3	2	1
Net sales	\$1,726.0	\$1,356.5	\$1,345.7	\$1,368.9
Operating margin(loss)	(104.9)	52.4	34.8	42.9
Income(loss) before cumulative effect of accounting change	(86.1)	28.8	21.9	4.5
Cumulative effect on prior years of change in accounting for income taxes				135.1
Net income(loss)	\$ (86.1)	\$ 28.8	\$ 21.9	\$ 139.6
Earnings(loss) per share before cumulative effect of accounting change	\$ (1.83)	\$.61	\$.47	\$.10
Cumulative effect on prior years of change in accounting for income taxes, per share				2.87
Earnings(loss) per share	\$ (1.83)	\$.61	\$.47	\$ 2.97
Dividend per share	\$.30	\$.30	\$.30	\$.30
Stock price:				
High	35 ⁷ / ₈	32 ³ / ₈	31 ¹ / ₈	32 ⁷ / ₈
Low	25 ¹ / ₈	29 ¹ / ₄	27 ¹ / ₈	25 ¹ / ₂

Operating margin in the first quarter of 1988 reflected a \$12.7 million charge for the discontinued SLAT program and a \$12.1 million charge for the settlement with the Government regarding self-insurance costs deemed unallowable. First quarter net income was also degraded as a result of \$19.7 million of nonrecurring interest costs. The effect of the change in accounting for income taxes is described on page 53. Second quarter operating margin included a \$10 million margin reduction adjustment on the F-15 ECM development contract, and reduced margins stemming from higher costs as well as lower sales for the MX Peacekeeper program. Net income for the second quarter also reflected \$11.5 million in nonrecurring gains from the sale of Northrop Services, Inc. and half of the company's investment in Fokker Aircraft Company. The operating loss in the fourth quarter includes provisions made on several long-term fixed-price research and development contracts of the MUVS and electronics industry segments. The major contract included in the MUVS segment is classified. In the course of its pursuit of an equitable settlement of various customer contractual issues the company concluded in February 1989 that it would probably sustain \$150 million in losses on these classified contracts, and therefore reflected such provision in its fourth quarter 1988 operating results.

The company's common stock is traded on the New York and Pacific Stock Exchanges (trading symbol NOC). The approximate number of holders of record of the corporation's common stock at January 31, 1990, was 14,328.

development activity, including but not limited to the B-2. During 1988, and again in 1989, the decline in B-2 research and development revenues as the program progressed was only partially offset by higher revenues from initial low-rate production contracts. Missiles and unmanned vehicle systems segment sales declined in 1989 primarily because of a \$120 million adjustment to sales recognized on a classified fixed-price research and development contract. The adjustment followed the reduction of the estimate of the percentage of work completed to date on the contract. This adjustment had no effect on operating profit because sales on this contract are being recorded on a break-even basis.

Sales under the F/A-18 program declined in 1989 with the delivery of 101 shipsets. In 1988, the company delivered 123 shipsets, compared with 141 in 1987, 134 in 1986 and 137 in 1985. In 1990, 94 shipsets are expected to be delivered.

Deliveries of 747 center fuselages were 54 in 1989, 39 in 1988, 25 in 1987, 37 in 1986 and 30 in 1985. Fifty-six fuselages are expected to be delivered in 1990.

In 1989, the company delivered the final three F-5 aircraft. The number of F-5E and F-5F aircraft delivered in each of the years 1988 to 1985 were two, two, 15 and 56 respectively. Two RF-5Es were delivered in 1986 and four were delivered in 1985.

Electronics segment revenues declined mainly due to lower MX Peacekeeper sales - 28 IMUs were delivered in 1989 versus 42 in 1988 when the company returned to contract delivery schedule. Deliveries of 23 IMUs remaining under current MX Peacekeeper contracts will be completed by mid-1991. Other 1989 reductions were in the areas of automated test equipment, electronic sensors, and gyros. The contraction in business opportunities within some of these product lines led to the merger of the Electronics and Electro-Mechanical Divisions for increased efficiency.

The services segment revenues declined in 1989 following the loss of two military base maintenance contracts and the decision to not rebid a U.S. Customs contract for seized property management services. Sales fell in 1988 following the sale of Northrop Services, Inc. as of June 30, 1988. This subsidiary contributed \$35.1 million in sales and \$1.5 million in operating profit in 1988.

The year-end funded order backlog is the sum of the previous year-end backlog plus the year's contract acquisitions minus the year's sales. Backlog is converted into the following years' sales as deliveries are made under contract terms. It is expected that approximately 75 percent of the 1989 year-end backlog will be converted into sales in 1990.

Total U.S. Government orders, including those made on behalf of foreign governments (FMS), comprised 87 percent of the backlog at the end of 1989 and 1988, compared with 95, 88 and 89 percent at the end of each of the preceding years, respectively. Total foreign customer orders, including FMS, accounted for three percent of the backlog at the end of 1989, compared with seven percent in 1988, nine percent in 1987, 16 percent in 1986 and 22 percent in 1985. Domestic commercial business remaining in backlog at the end of 1989 was 12 percent, compared with 10, two, five, and four percent at the end of each of the preceding years, respectively.

